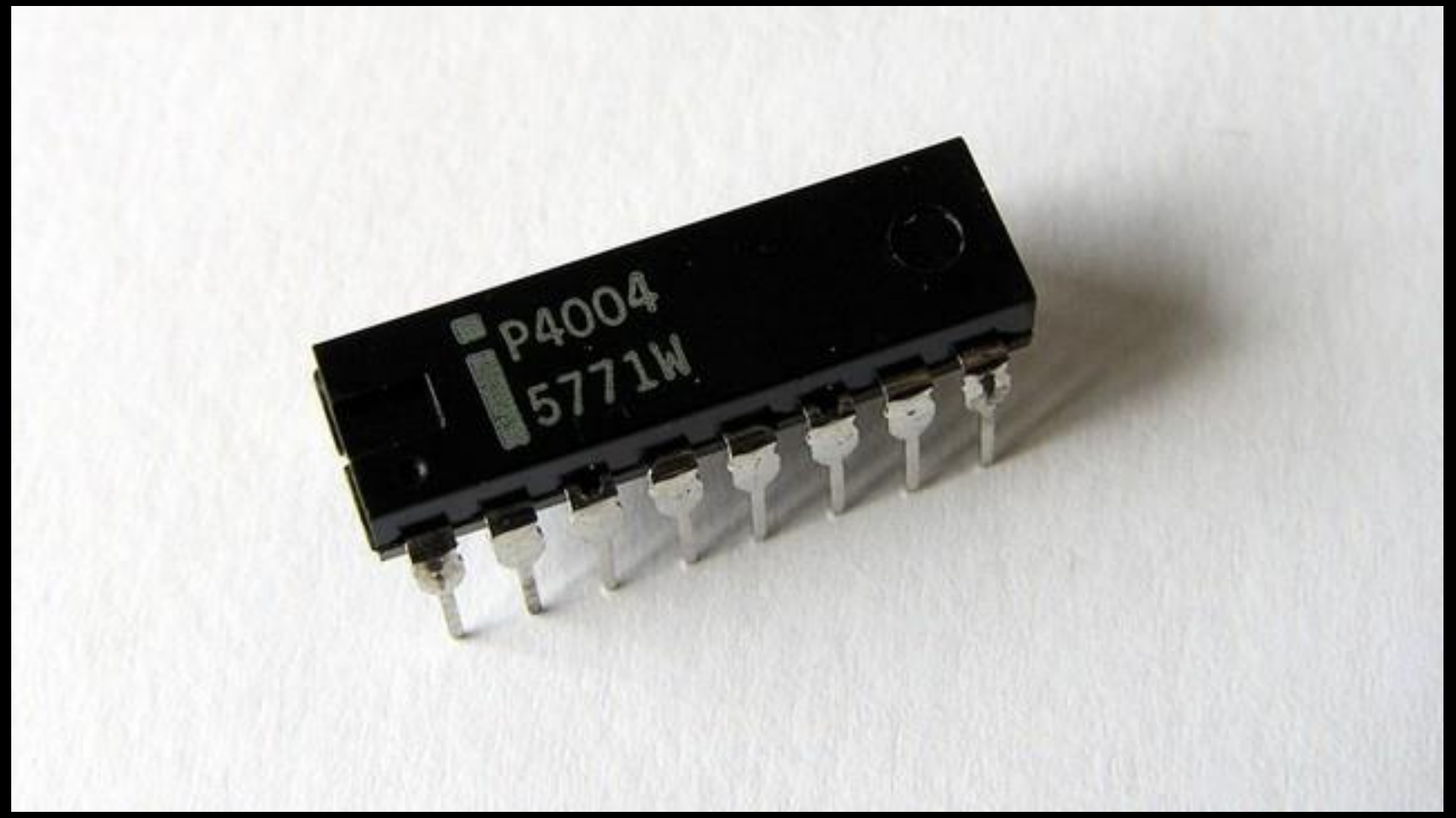
technology + demographics + **transportation**

rollin stanley
Urban strategy
City of Calgary

Alaska Common Ground
march 17


TUT
384M

Calgary



first commercial microprocessor chip - 2,300 transistors

skylake chip - 1.75 billion transistors

500,000 would fit on a single 4004 transistor

deliver 400,000 x the computing muscle

if cars progressed at the same rate, the fastest would travel at 67,061,662 miles per hour


the tallest building would now reach half way to the moon

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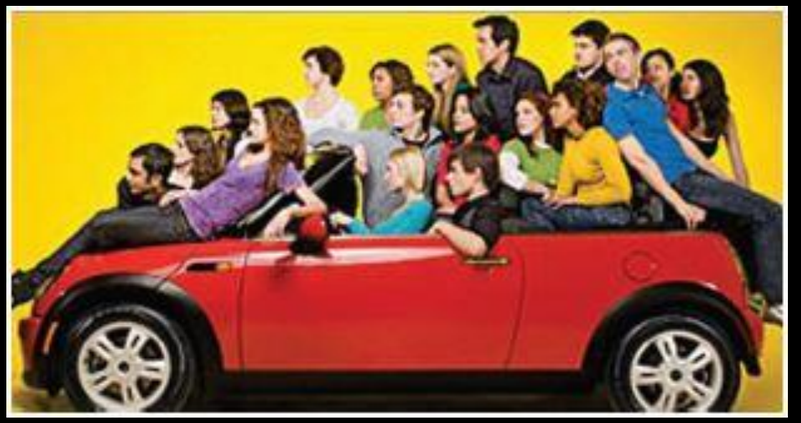
transportation disruption?

three disruptors

ride sharing
autonomous vehicles
electric vehicles



impact on

public transportation

operations

mode

costs

parking facilities

vehicle ownership

vehicle trips

miles travelled

level of service

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UBER investing $500 million to not use Google maps

valued at $9 billion

they don’t own anything

a taxi licence is now worth nothing

transportation disruption

autonomous vehicles + ride share

may reduce the number of cars needed
may reduce or increase the number of parking spaces
may reduce costs so much transit riders shift = future gridlock

gas price + vehicle trips - DC when gas hit $6

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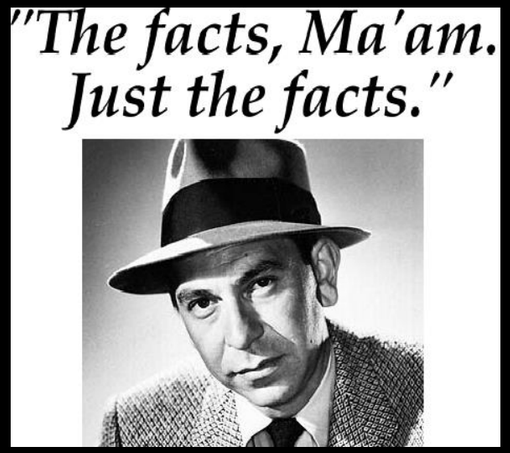
what is transportation about ?



US traffic delays = 3 billion gl of fuel
7 bi hours in a car
cost = $160 bi - $960 | commuter

US public transportation trips 2016 - 10.2 billion
1990 5,740,648 bus riders (not brt)
2016 4,945,927

interstate highway
housing subsidy

transit & climate change

net reduction in ghg - takes vehicles off the road

increasing frequency

vehicle loads

operating hours

all reduces ghg

reduces congestion idling

alternate fuels

calgary transit - renewable energy

transit should

spur economic growth

enhance environmental conditions

build social equity

useful transit

all purpose riders
frequency | travel time | destination
walkable | connected
density
multimodal
weather protection

useful transit - designed for all purpose riders

occasional - once in awhile
commuters - 2 x daily | 5 days wk
all purpose
work | shopping | entertainment | errands
regular part of their routine

ride for multiple purposes & in off peak hours

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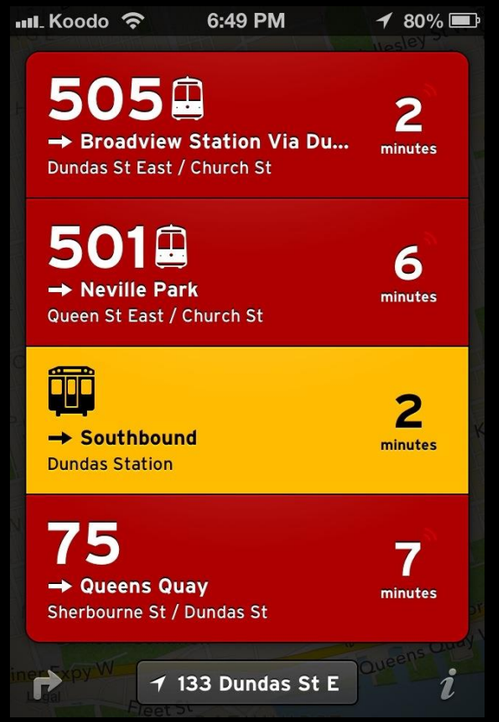
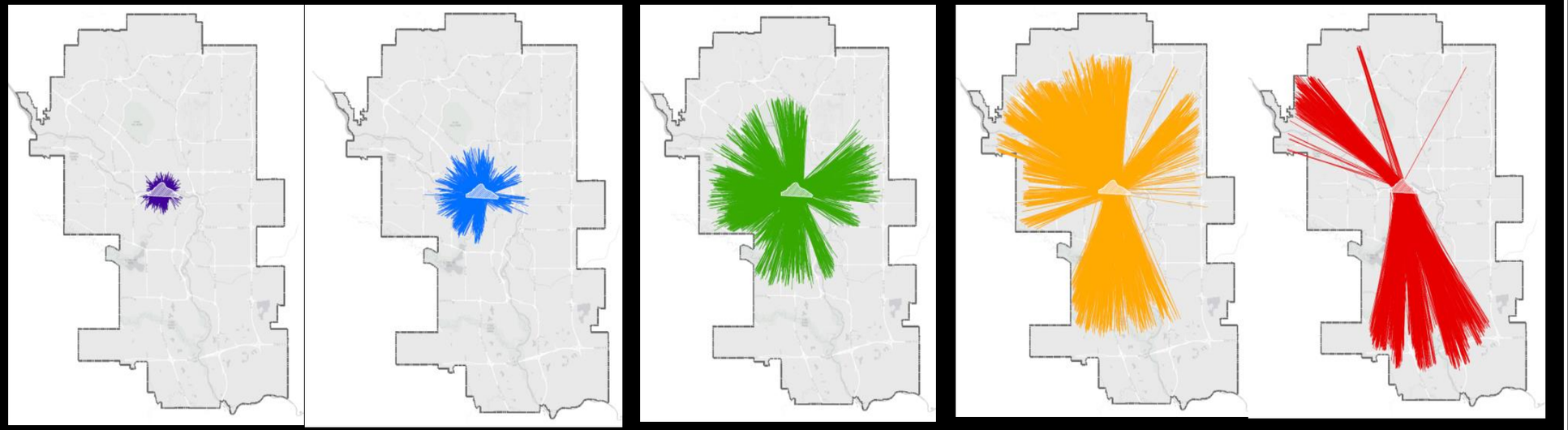
useful transit - frequency | travel time | destination

dedicated right of way
signal priority
prepaid fare cards
direct routes
mobile apps



Calgary

Where do downtown workers live?



Within 2km	2.1 to 5km	5.1 to 10km	10.1 to 15km	Over 15km
14%	17%	27%	26%	16%

useful transit - designed for all purpose riders

do not design for the peak service

peak only service increases costs for transit

union agreements split peak service


Will 23 lanes be enough?

Proposal would put I-75 among country's biggest

By ARIEL HART
ahart@ajc.com

It's wider than an aircraft carrier. Far wider than the carving on Stone Mountain. Wider than the White House stretched end to end, twice.

It's the planned I-75, all 23 lanes, coming soon to Cobb County. As currently conceived it's 388 feet across, wider than a football field is long.

23 LANES: The state Department of Transportation is planning to expand I-75 (below) and I-575 in Cobb and Cherokee counties. The 23-lane stretch would be between Delk and Windy Hill roads on I-75.

Truck lanes | General purpose lanes | HOV lanes | General purpose lanes | Truck lanes

Southbound | Northbound

Trucks pay toll.

Car/van pools and buses ride for free. Single-occupant vehicles must pay. Cost rises when traffic is heavier.

Traffic heads north on I-75, just north of I-285, on Thursday. A proposal for the interstate is enough to make a road builder weep with joy and make others wonder whether it's overkill.

all purpose riders

87 % of transit riders is jobs & consumers

- 49% to & from work
- 21 % shopping trips
- 17 % recreational

useful transit - walkable | connected

to home
- work
- retail
- services
- entertainment

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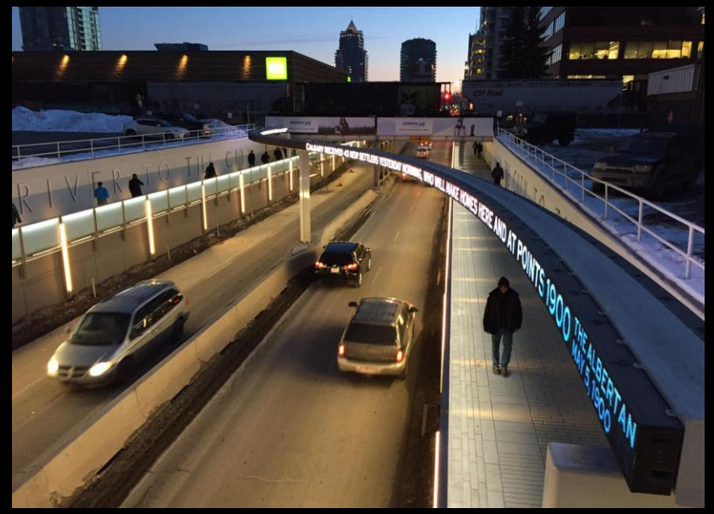
useful transit - walkable | connected

multimodal

Calgary

useful transit - walkable | connected

to home
- work
- retail
- services
- entertainment



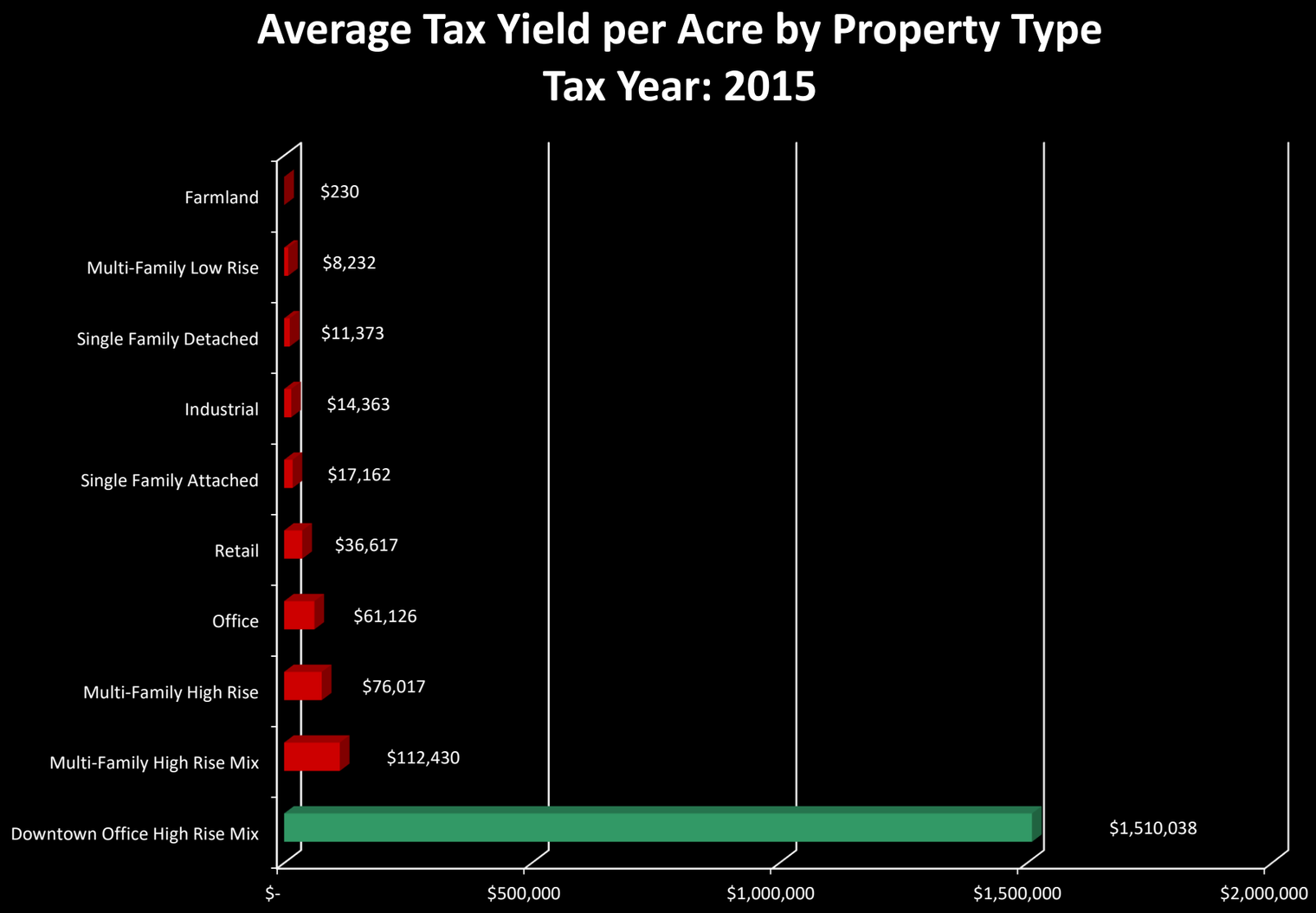
useful transit - density

= walkable | connected
generates - ridership
property tax

land use

revenue - calgary

inner city density pays



useful transit - density

don’t wait

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useful transit - density

don’t wait

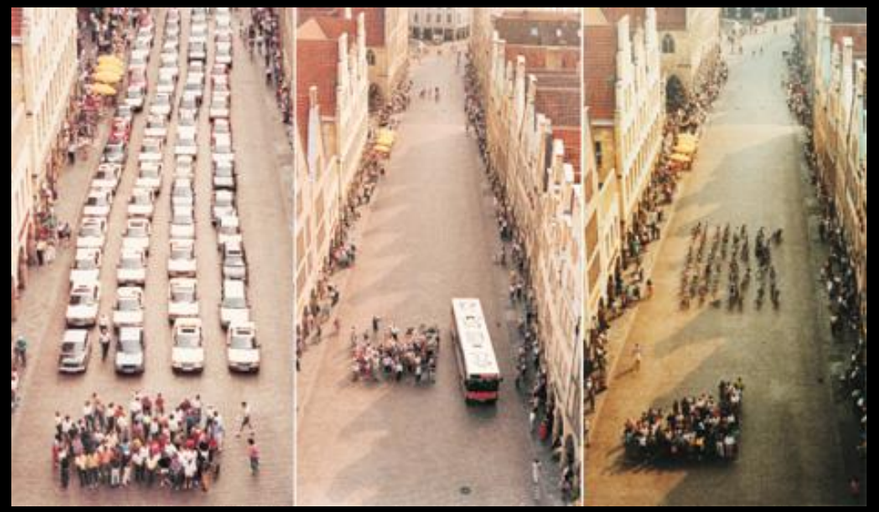
Calgary

useful transit - multimodal

walk | run
bike
carpool
bus | local | brt
slugging
rail

UBER

lyft



Calgary

useful transit - multimodal

walk | run
bike
carpool
bus | local | brt
slugging
rail

UBER

lyft

“Spontaneous carpooling: Calgary’s planning chief suggests hitch hiking as a grassroots solution to city’s gridlock”

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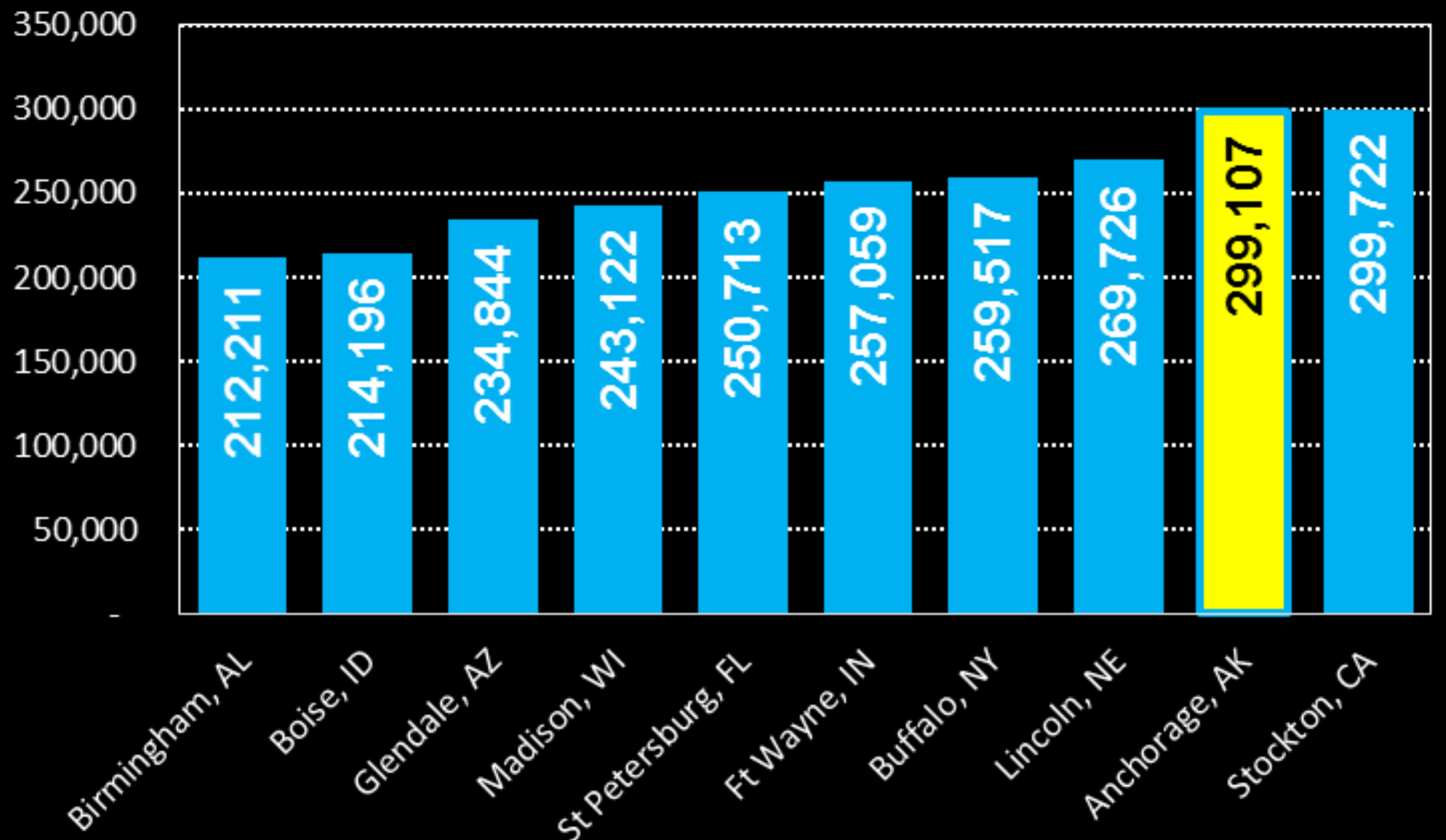
what is transportation about demographics?

the user

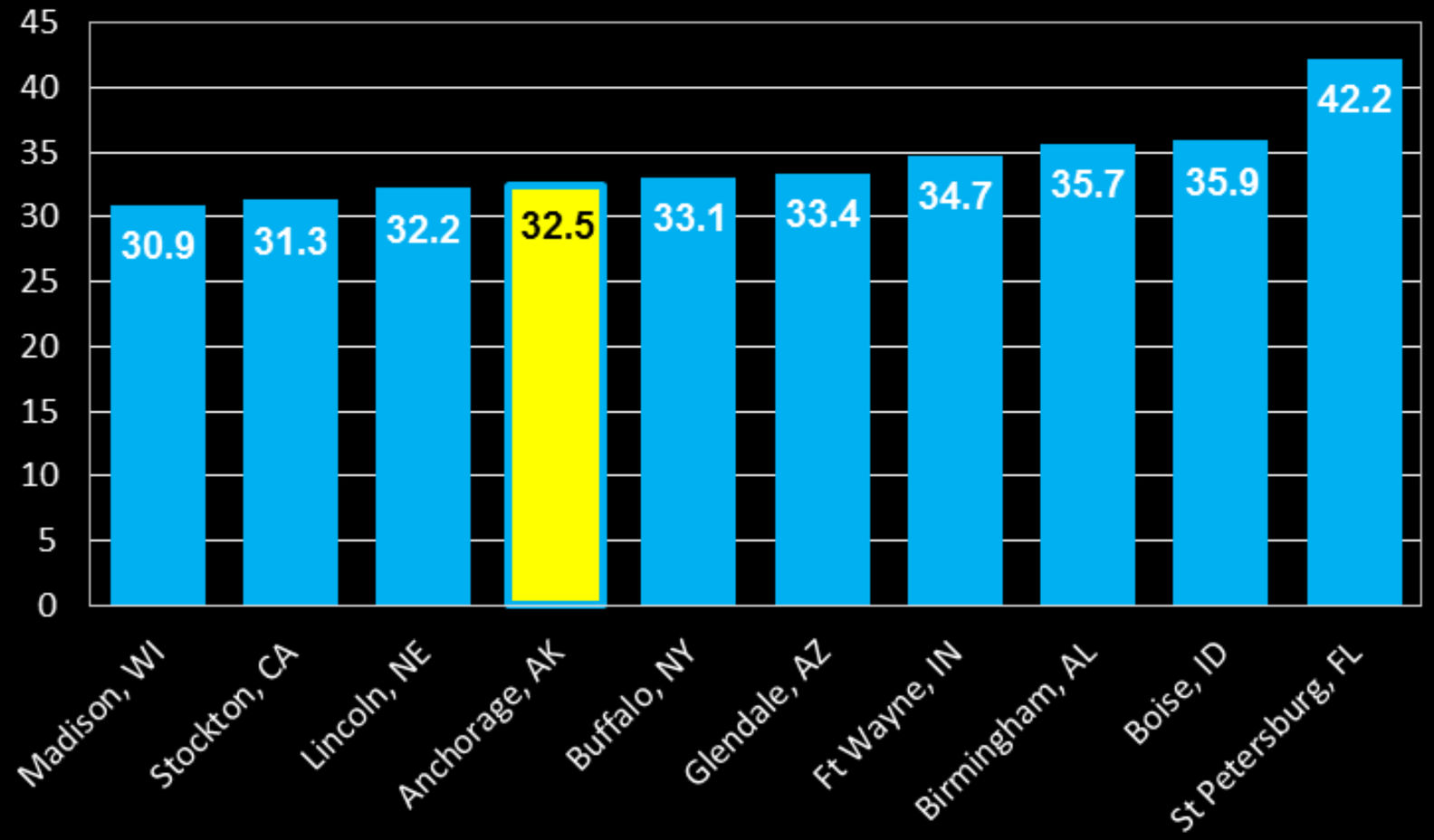
age	education	income
ethnicity	health	land use
employment	infrastructure	access

population

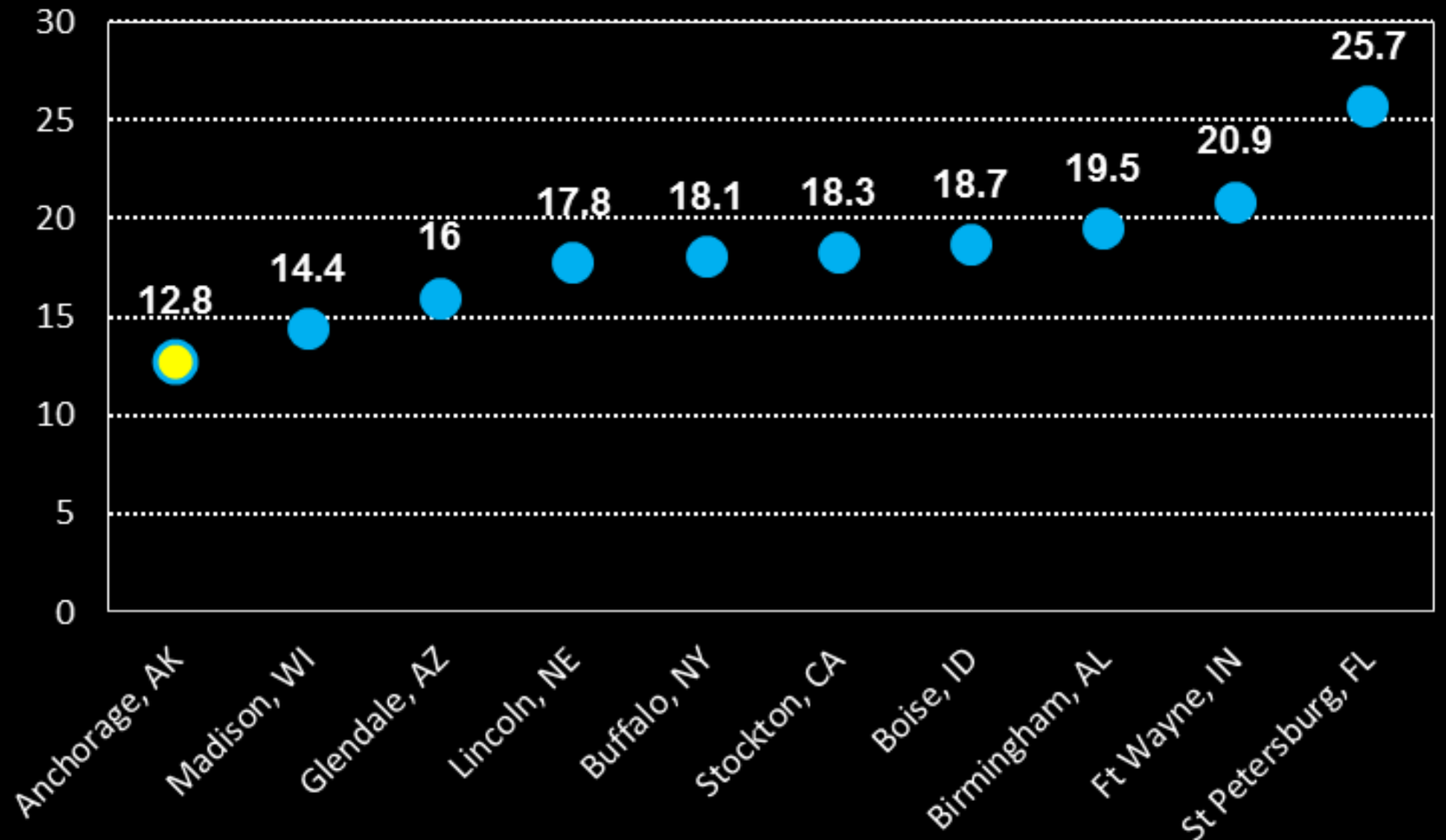

350,000
300,000
250,000
200,000
150,000
100,000
50,000
-
212,211
214,196
234,844
243,122
250,713
257,059
259,517
269,726
299,107
299,722
Birmingham, AL
Boise, ID
Glendale, AZ
Madison, WI
St Petersburg, FL
Ft Wayne, IN
Buffalo, NY
Lincoln, NE
Anchorage, AK
Stockton, CA

Calgary

median age



% of seniors to working aged adults



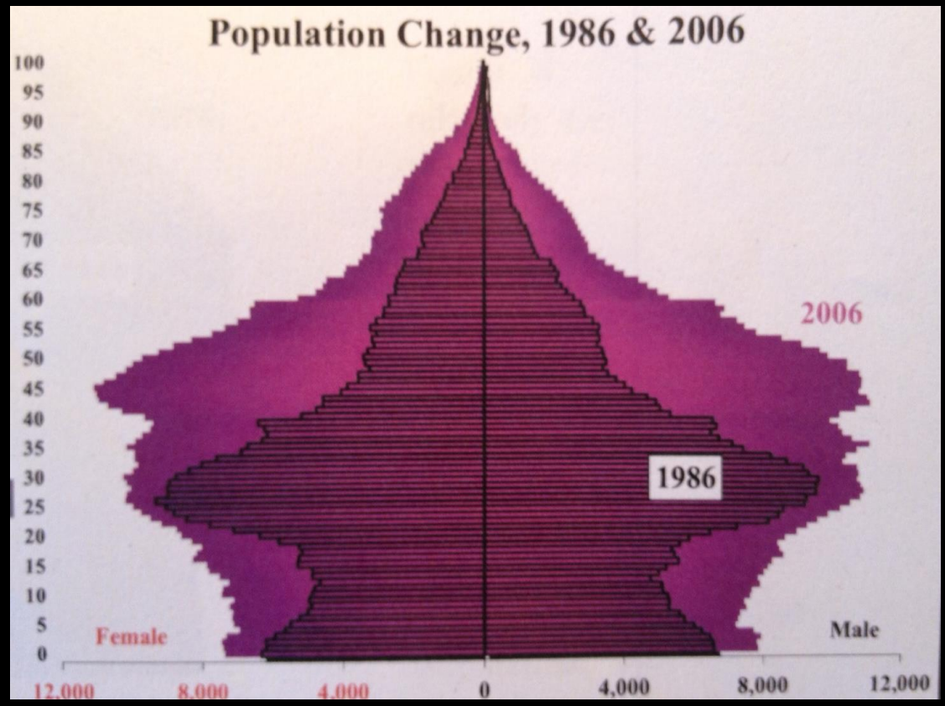
% of working aged adults to seniors - calgary

50 % increase in total population by 2039

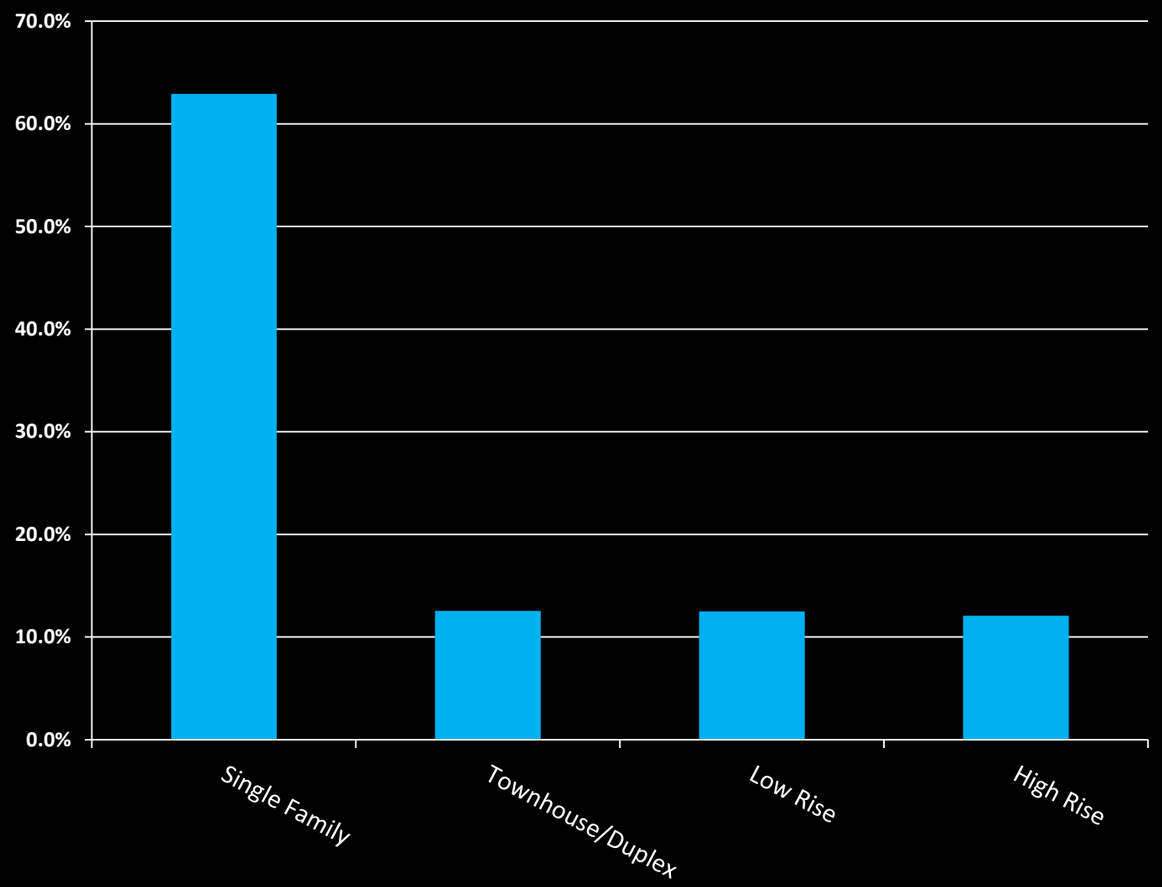
202 % increase in seniors population

58% drop in working aged adults to seniors in 33 yrs

	2011	2019	2029	2039
ratio	6.1	4.0	3.1	2.7



DC md suburbs - where do seniors live ?



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we are making decisions for the generations that follow

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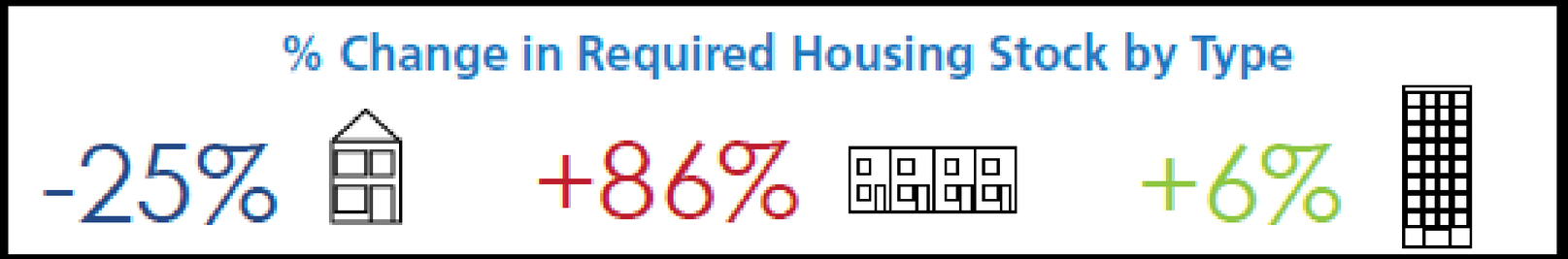
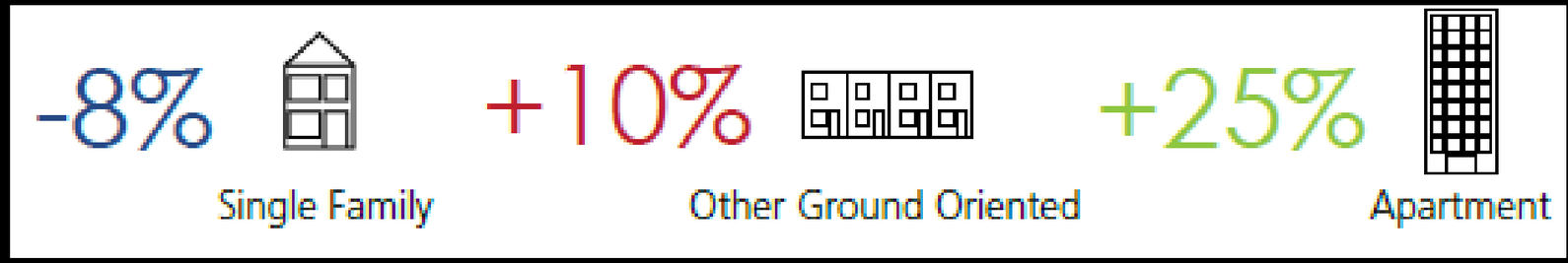
population impact on future housing supply - transportation

inner city



suburbs



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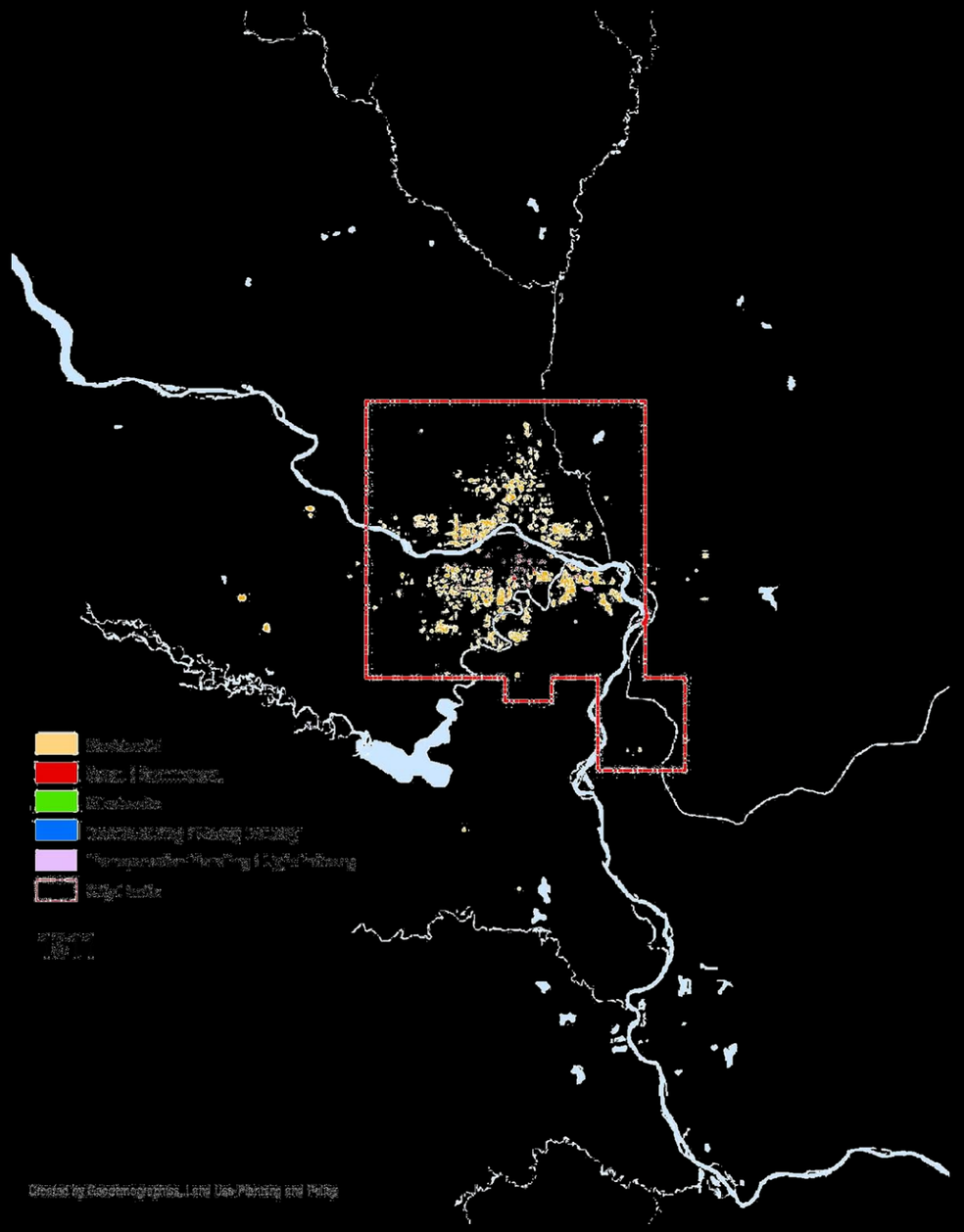
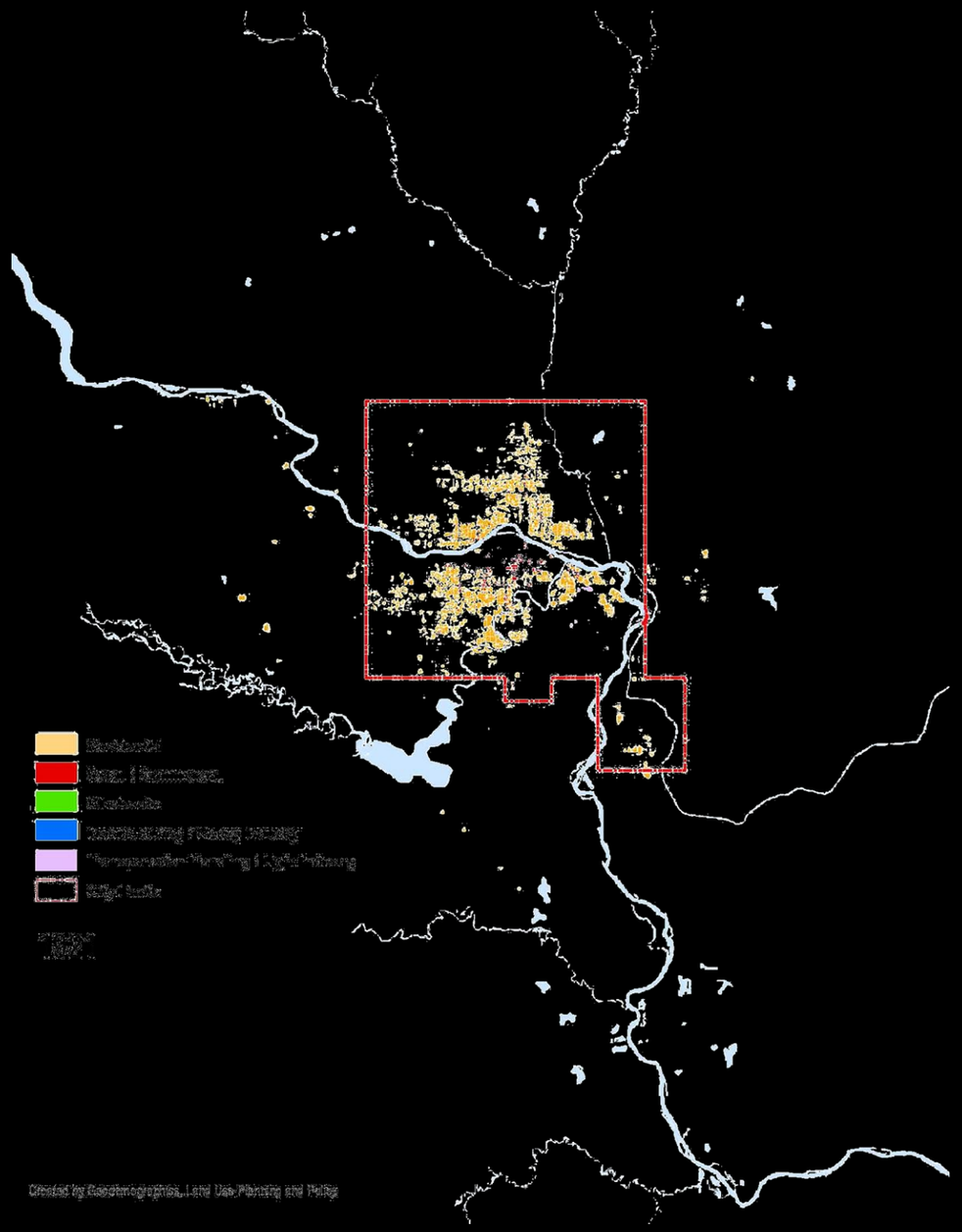
where is the growth ?

development patterns - 1901 calgary

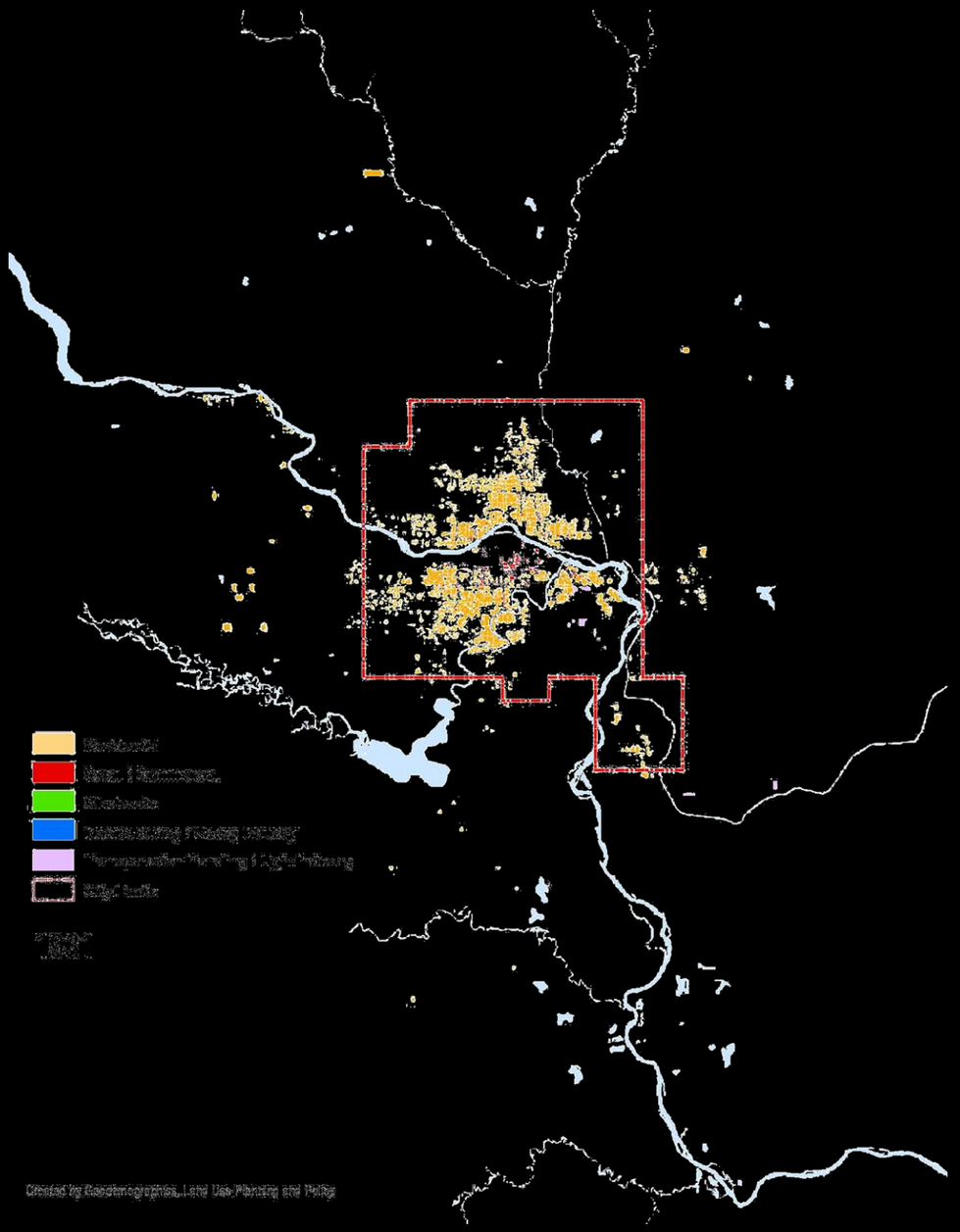
development patterns - 1911



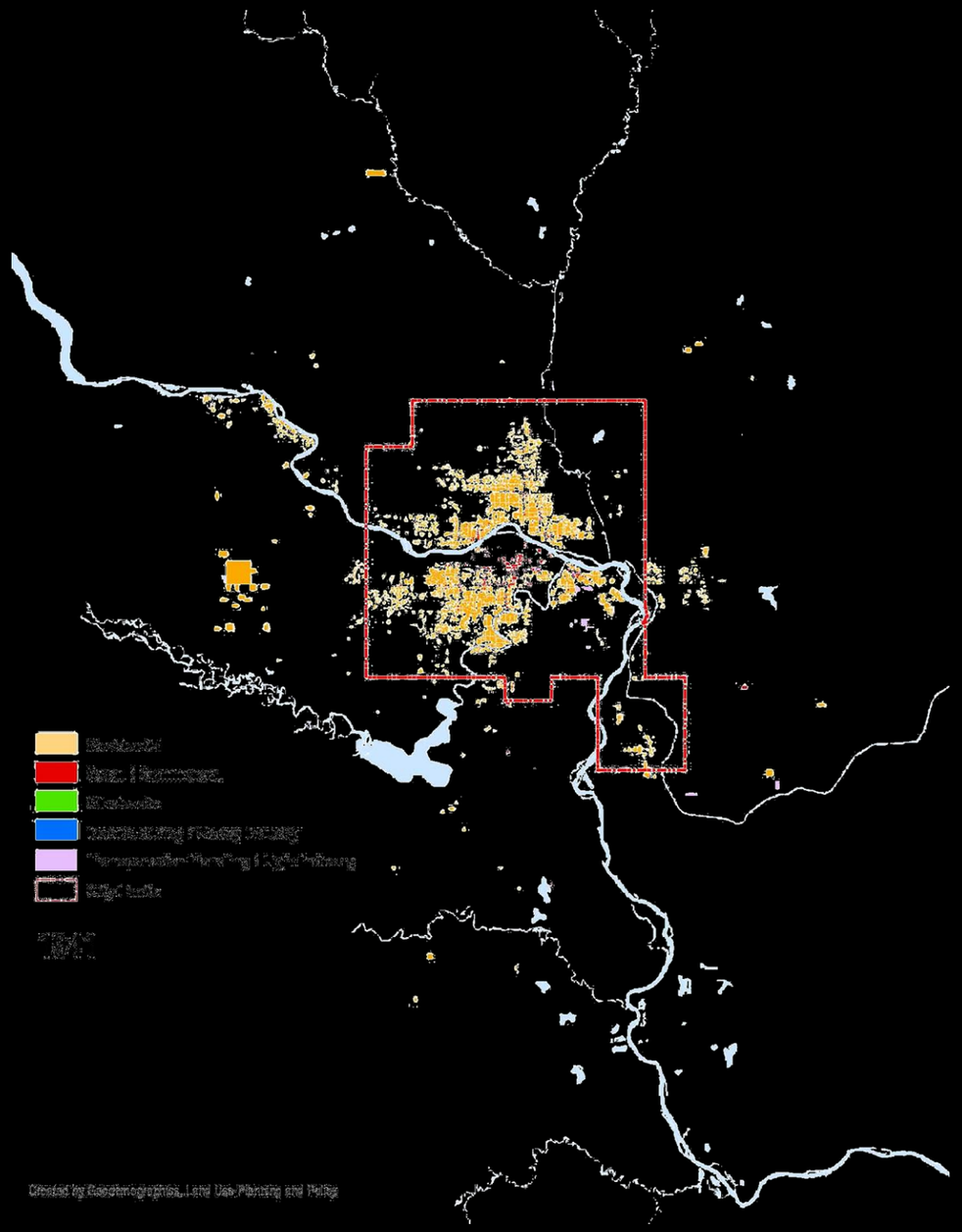
development patterns - 1921



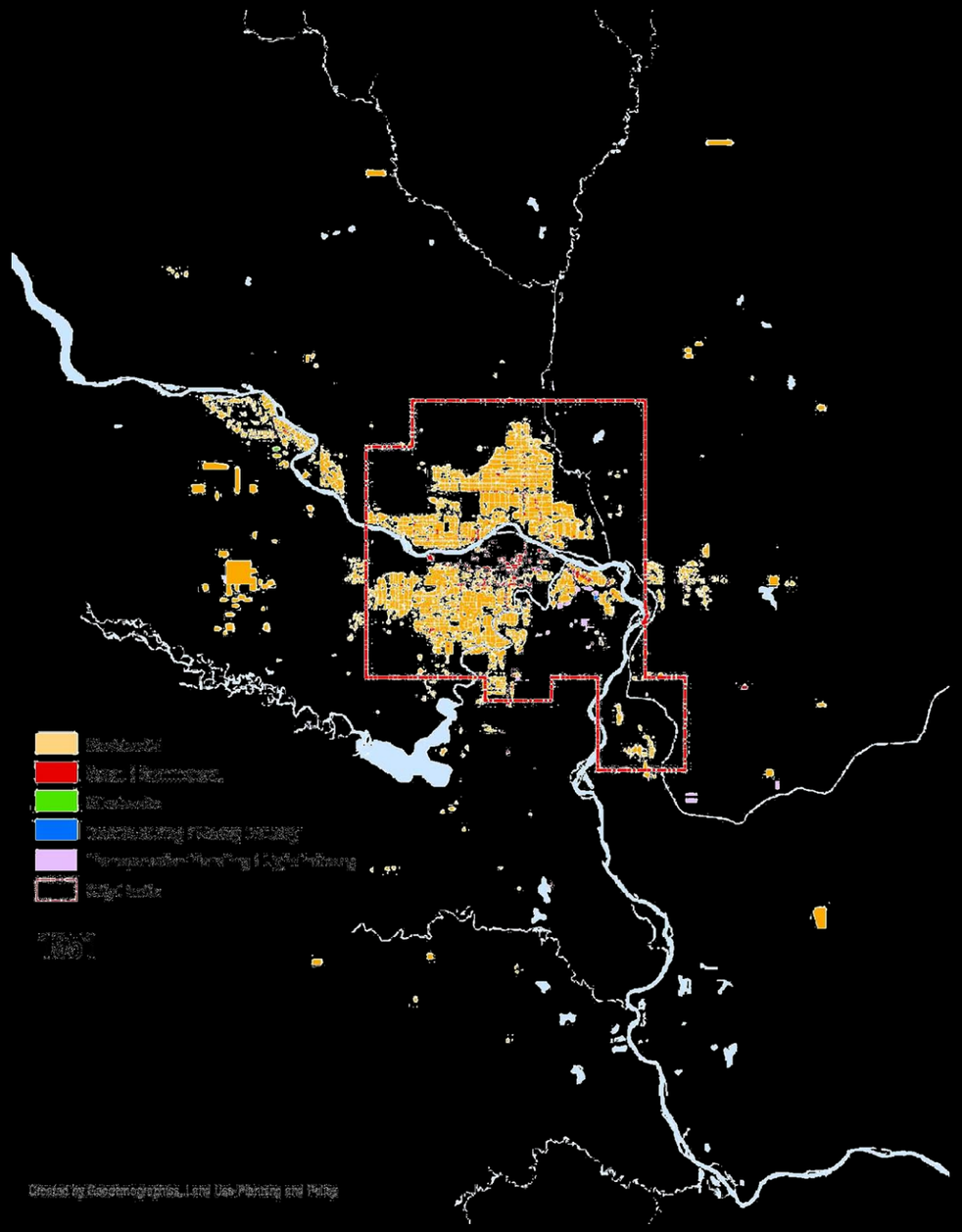
development patterns - 1931



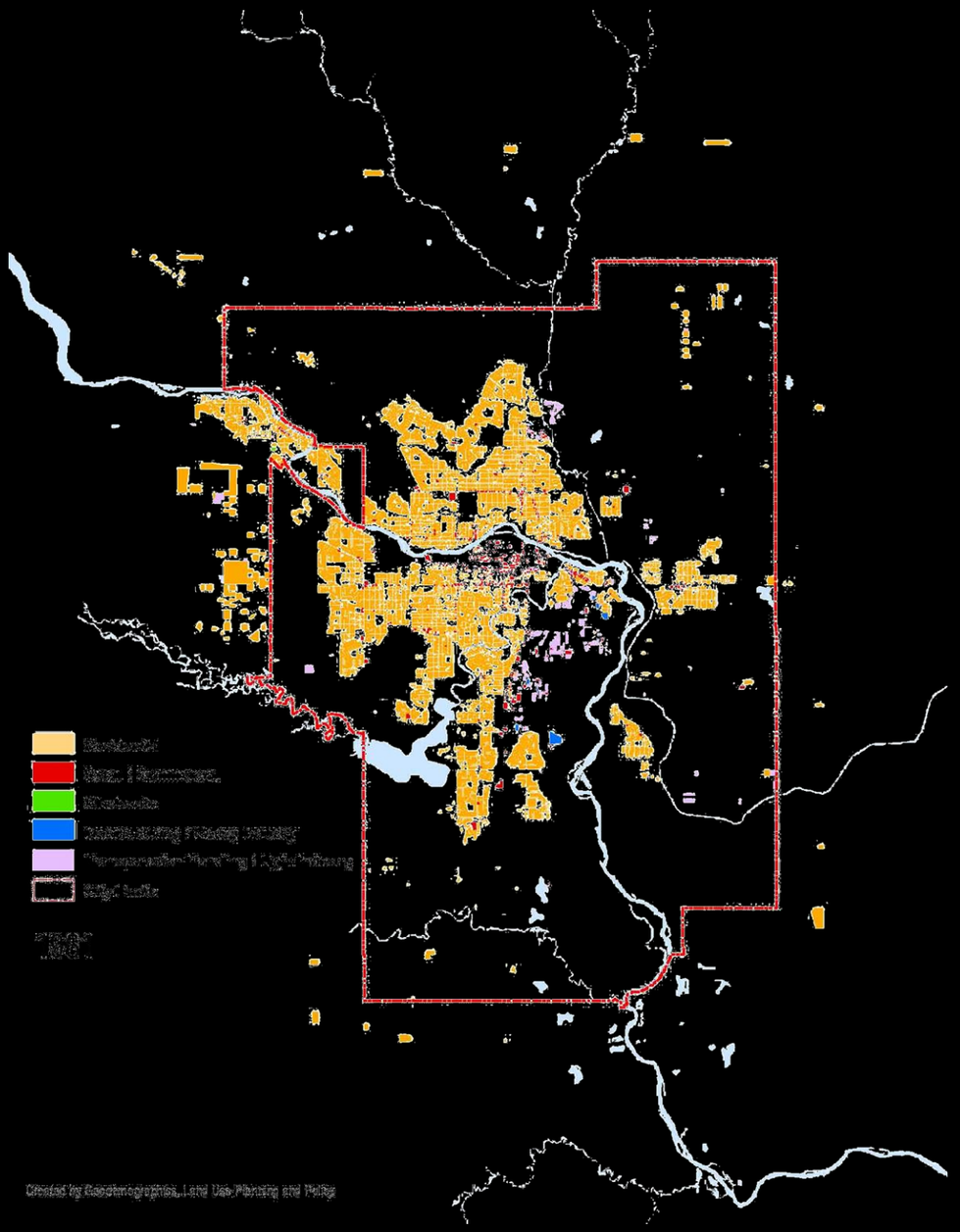
development patterns - 1941



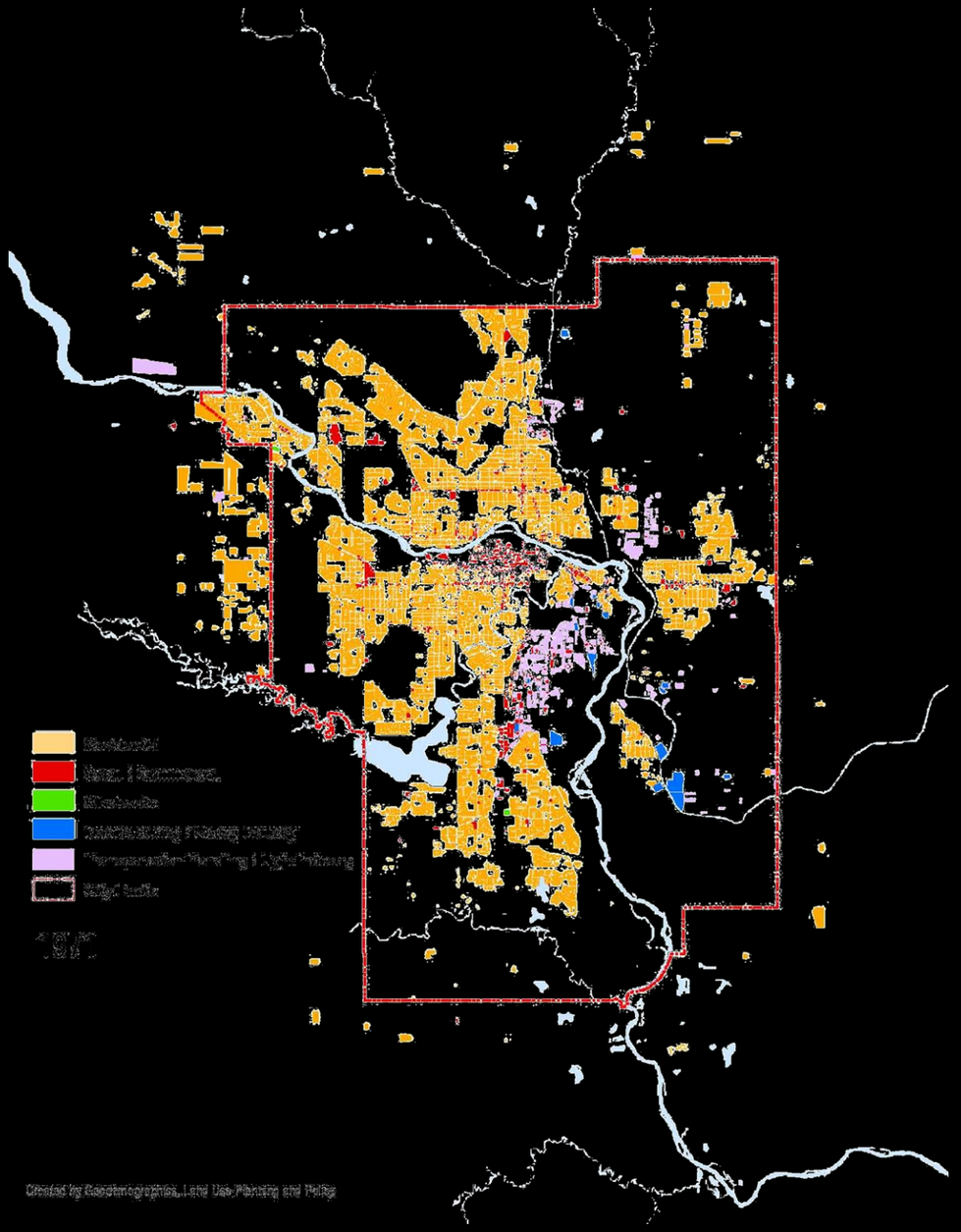
development patterns - 1951



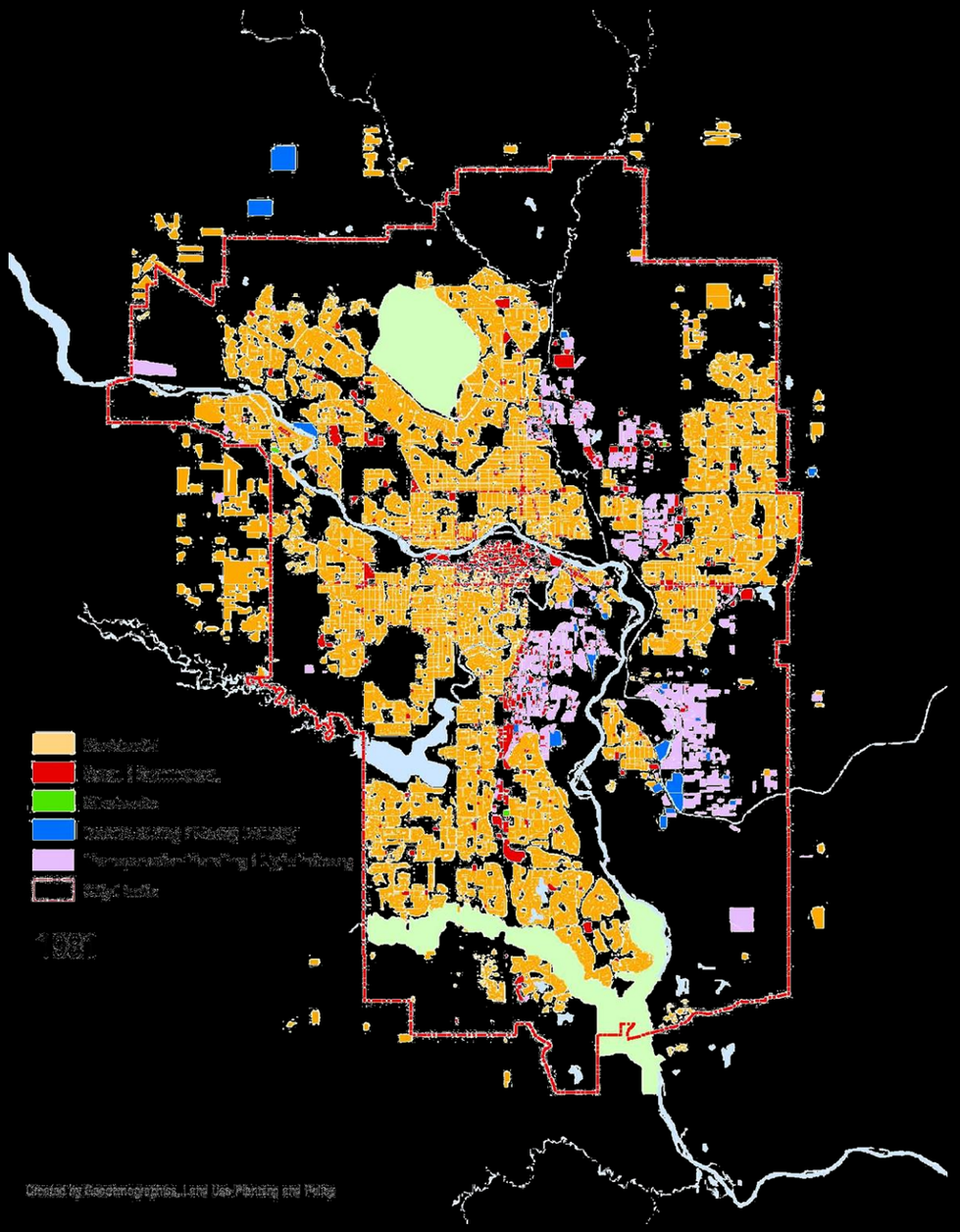
development patterns - 1961



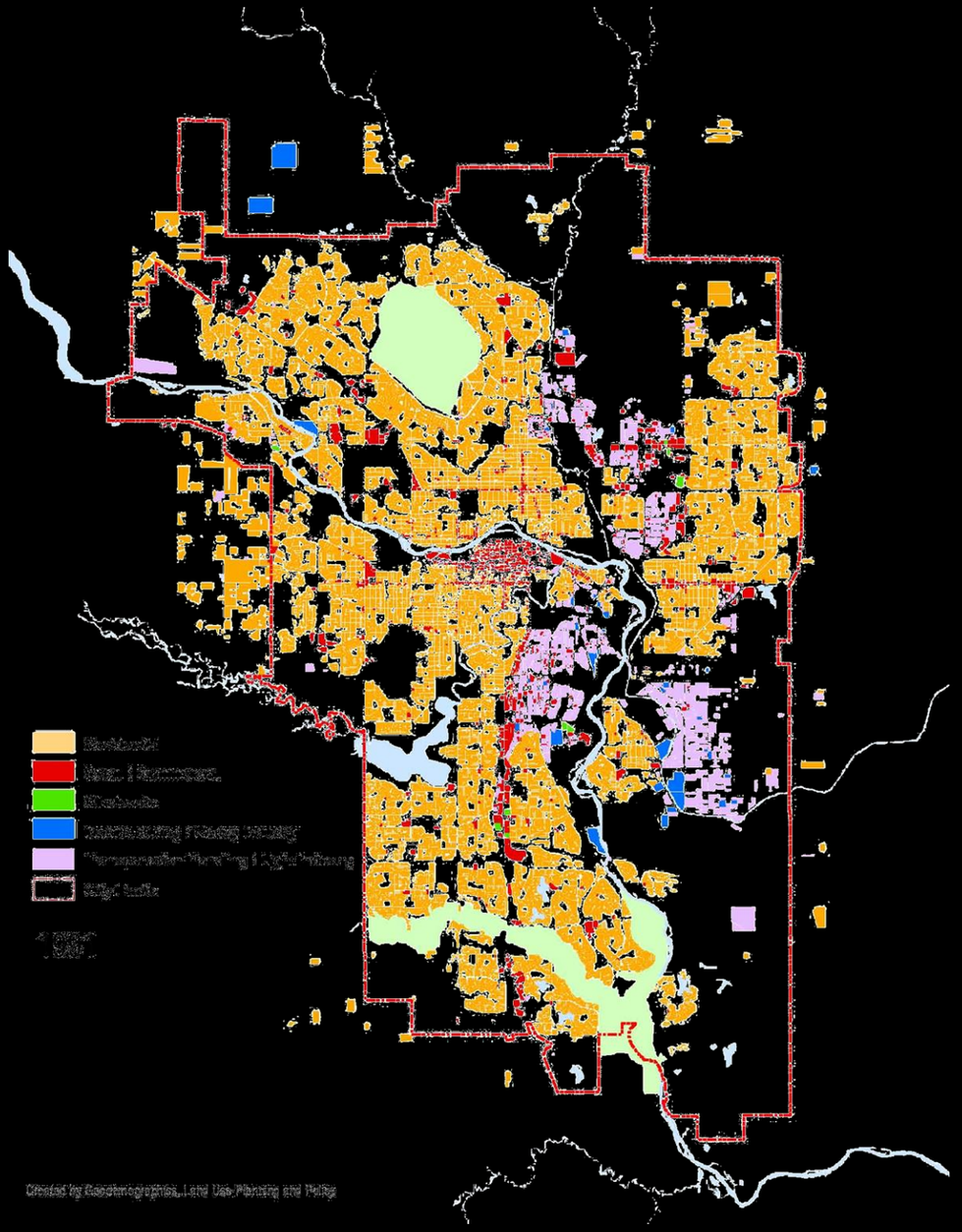
development patterns - 1971



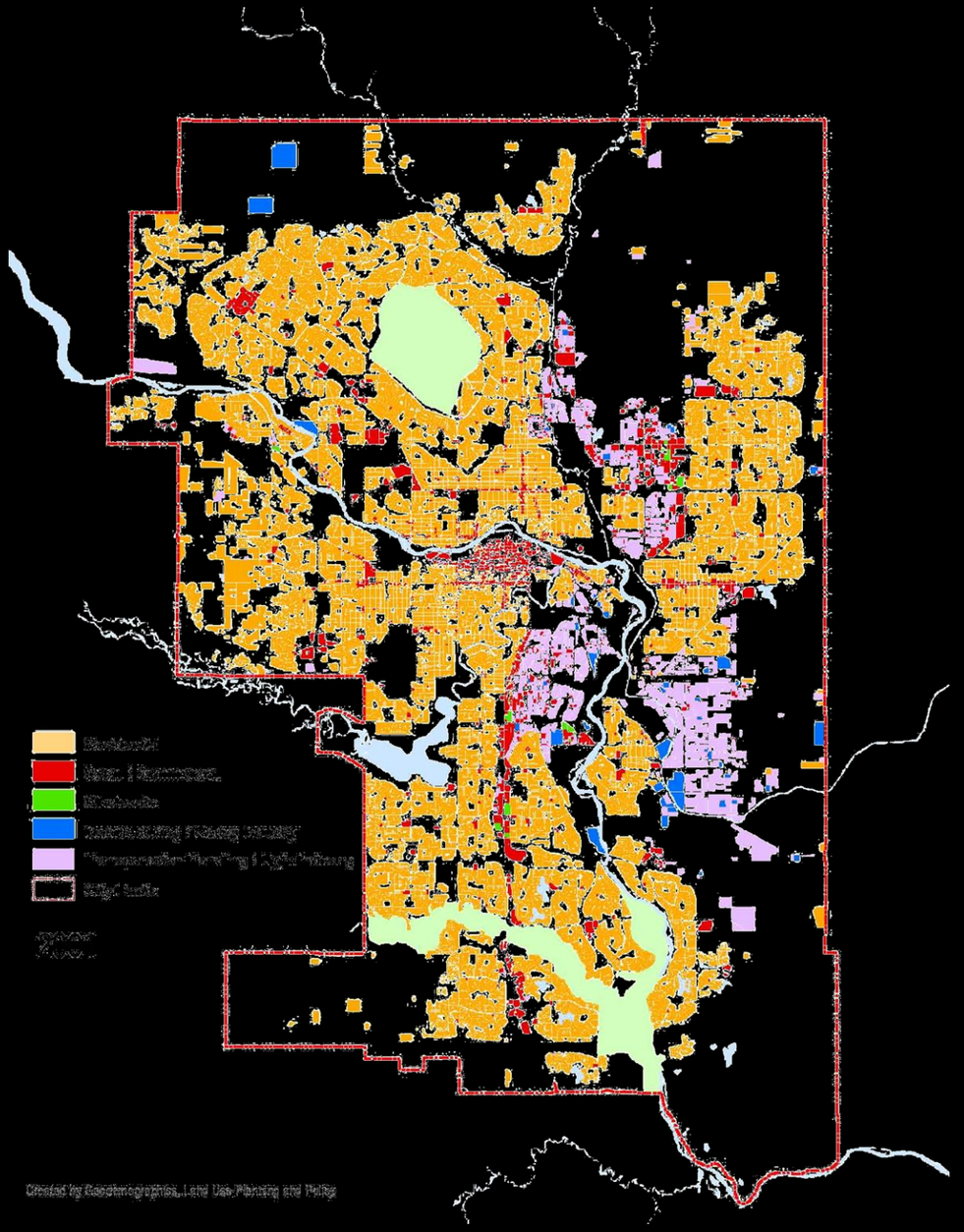
development patterns - 1981



development patterns - 1991

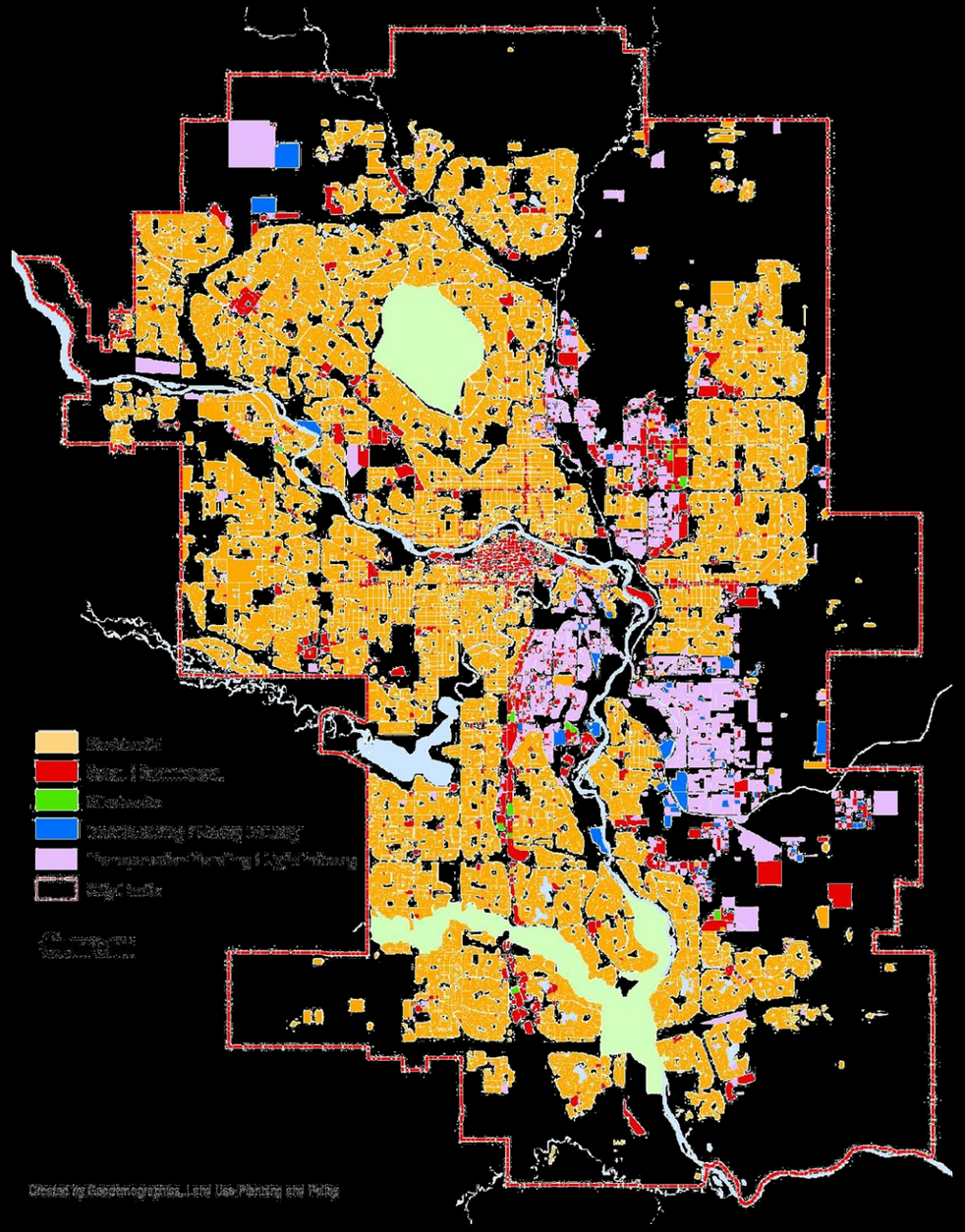


development patterns - 2001

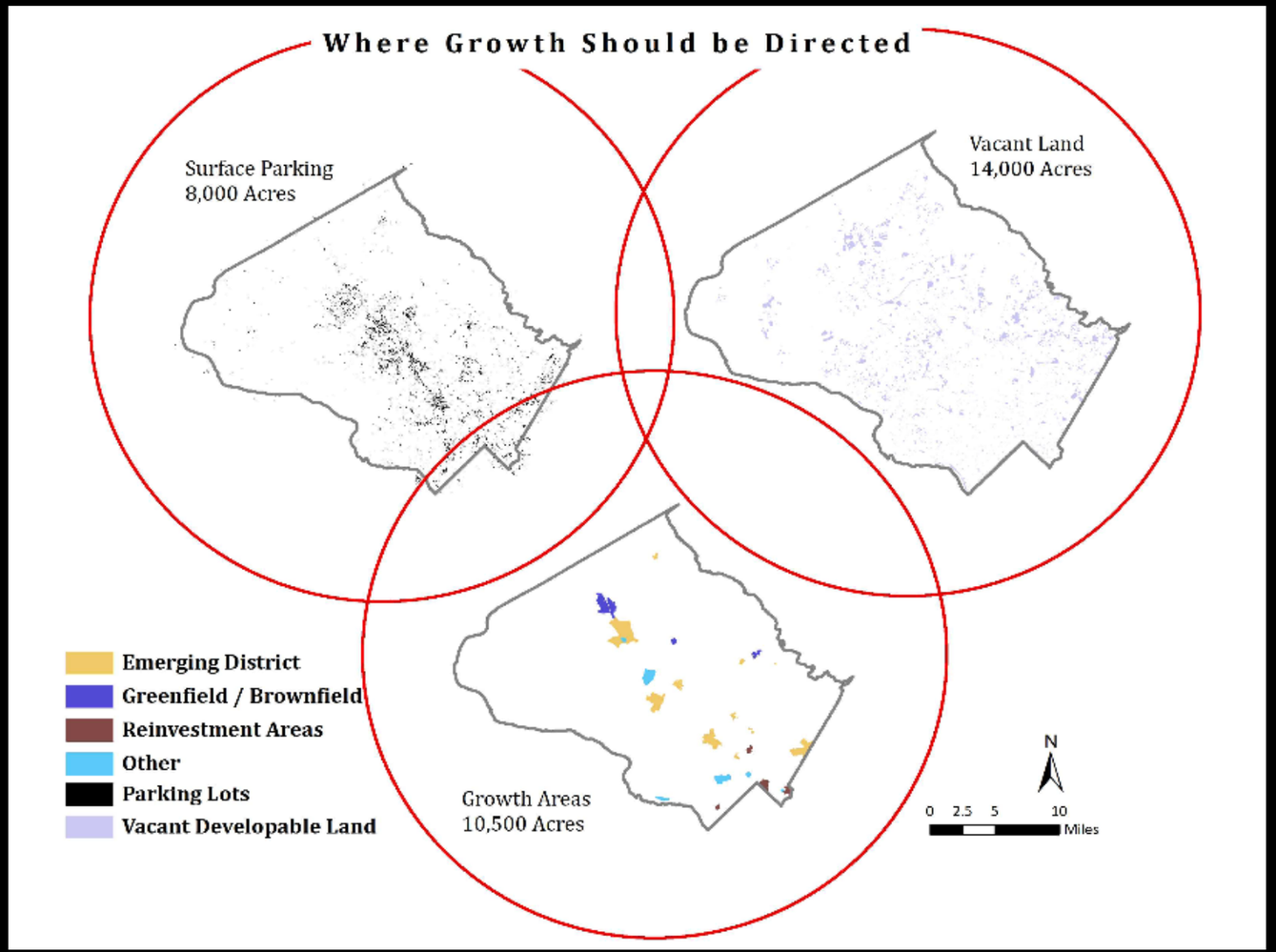


development patterns - 2016

what’s left
efficient infrastructure
role of transit



where will growth happen ? - md dc suburbs



where will growth happen ? - md dc suburbs

48% preserved

20% developed pre 1960

27% developed post 1960

4% undeveloped

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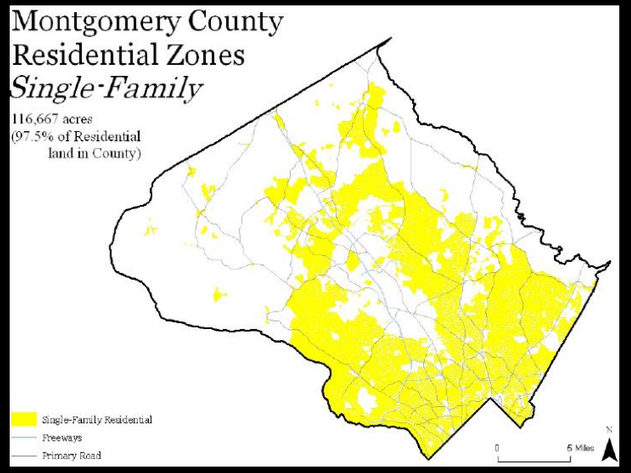
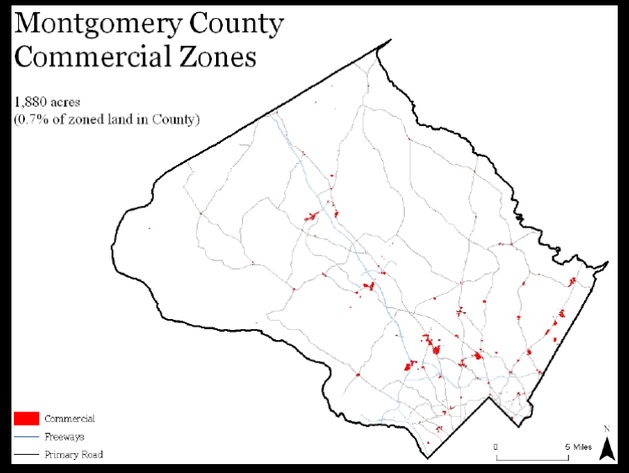
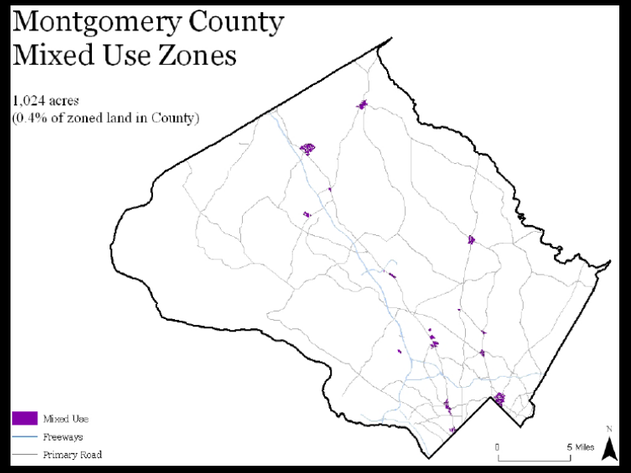
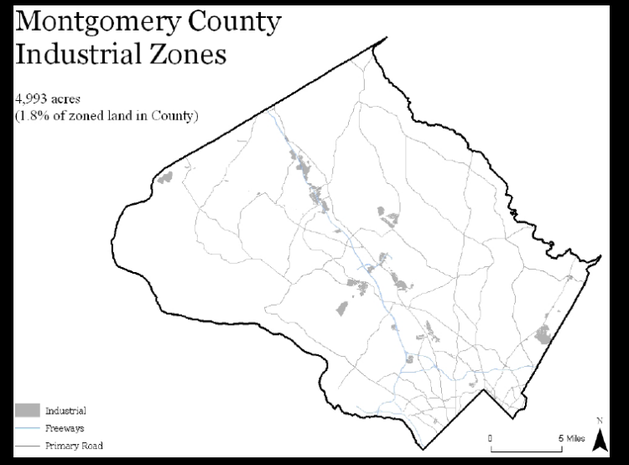
where will growth happen ? - md dc suburbs

single family homes = 75 % of the built land
69 % of the housing
98 % of the residential zoning









how much land is left to build on?

only 28,000 acres left to develop
by 2030

expect 200,000 people - new 77,500 hh

166,000 new jobs

where are they going to put everyone?

type of future residential - changes what gets built

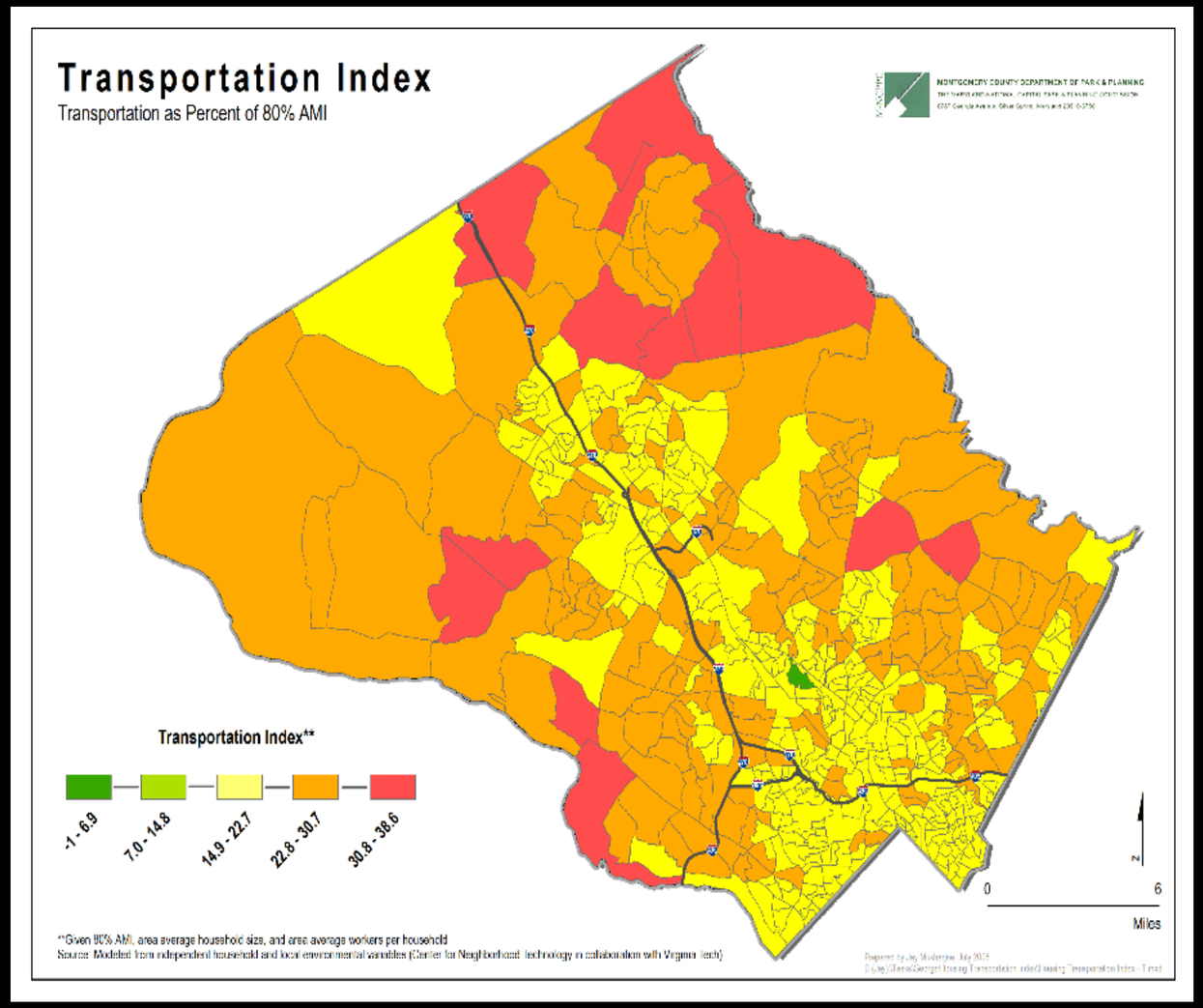
single family detached

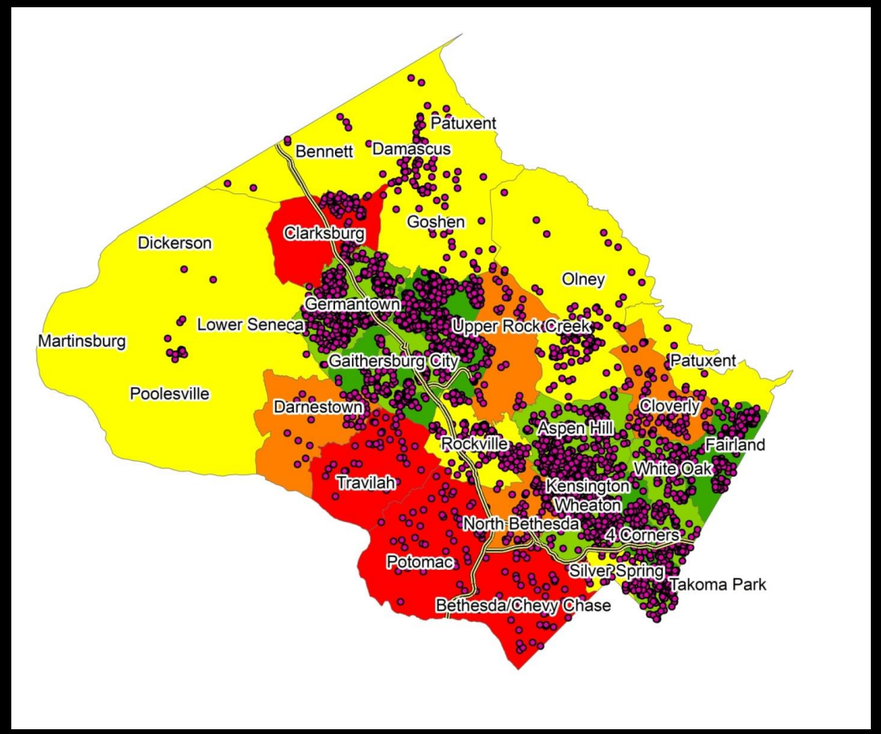
19 % of the new units

consume 70 % of the land needed

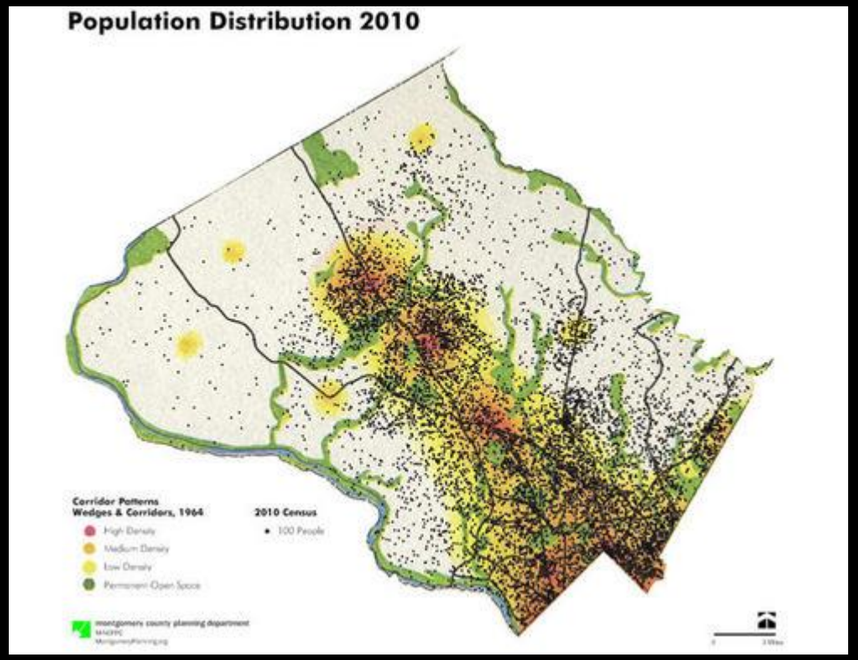
81 % of new units will be multi family - 180 degree

land use drives the % of HH costs dedicated to transportation $



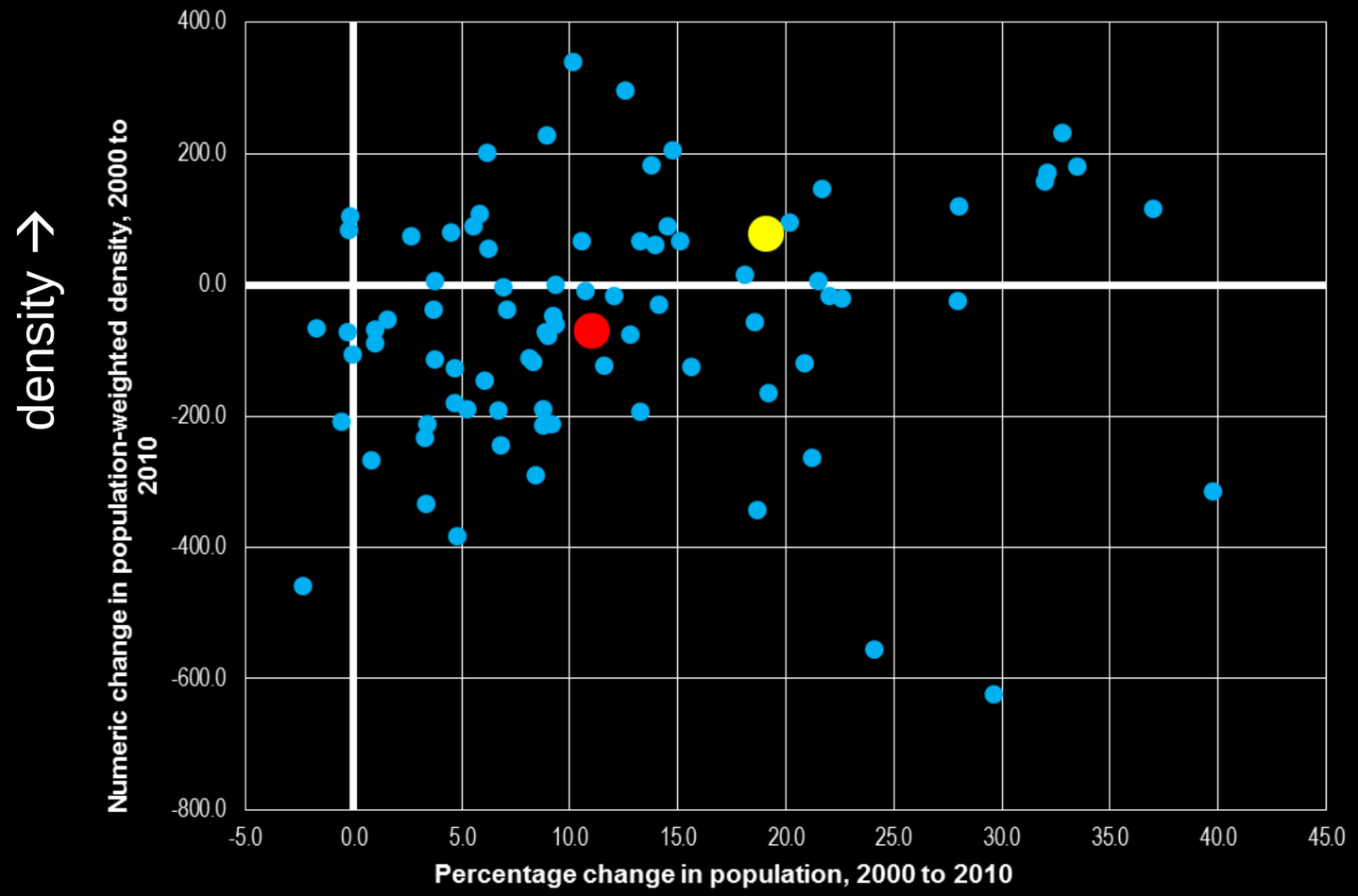


impact of employment shifts - DC md suburbs



change in population density, 2000 to 2010

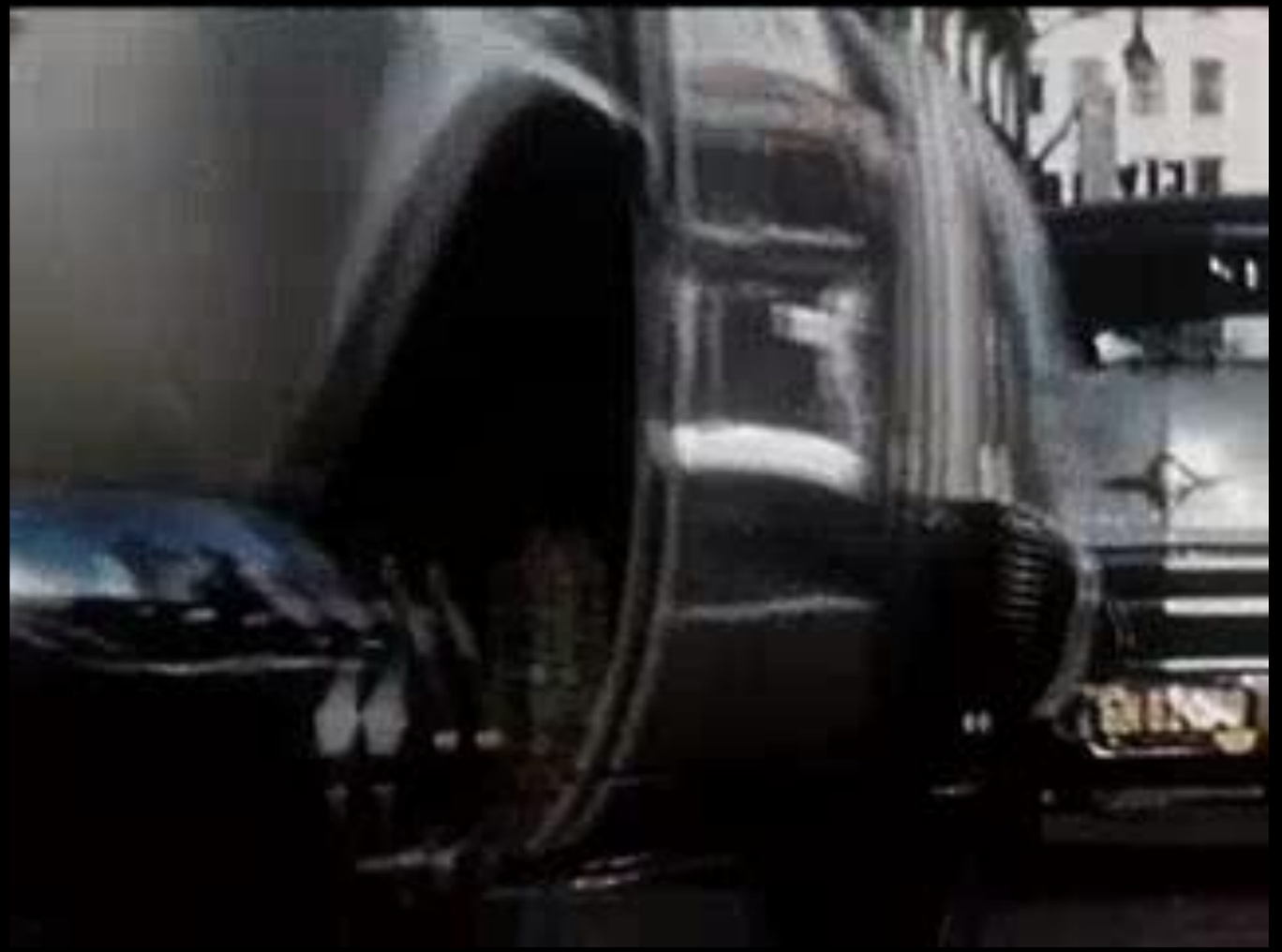
U.S. metro areas with pop. between 250k and 499k



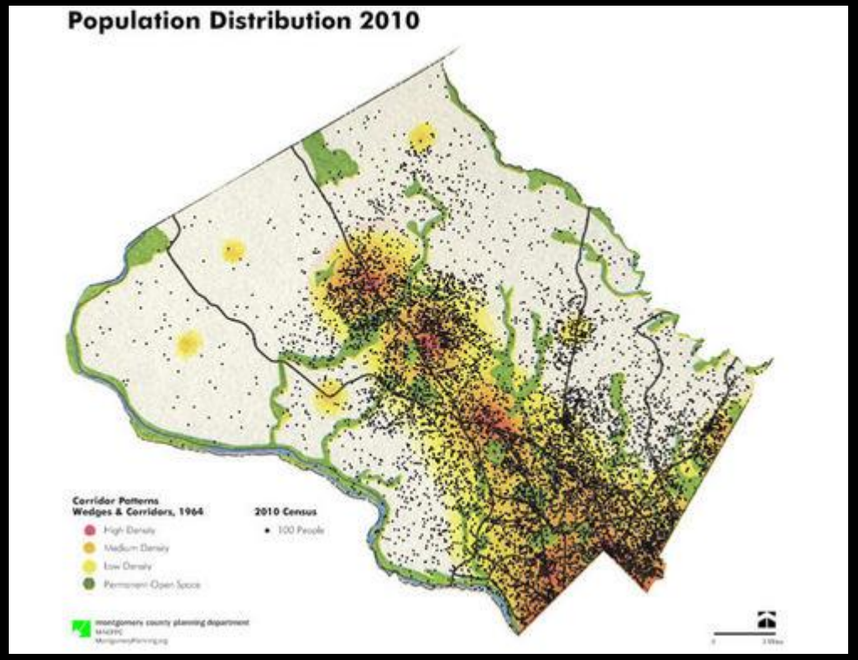
- Between 2000 and 2010, Anchorage metropolitan area's population grew 19.2%, and population density increased

- For the average of all U.S. metro areas of similar size, population grew less, and density decreased over the same period

transportation decisions last generations



DC md suburbs - consequences



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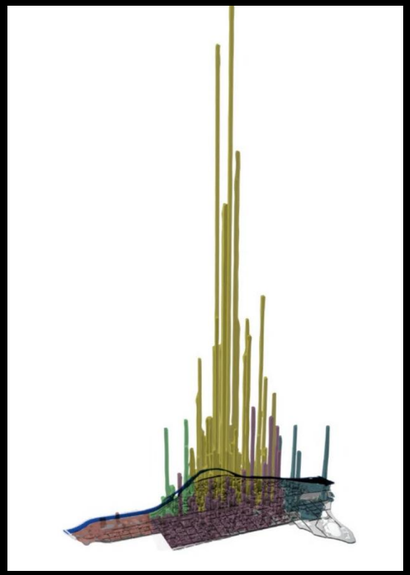
I paying for it

taxable property summary - calgary

	assessed value	percentage	2013 taxes (est)	
residential	$173,624,100,000	74 %	608,000,000	49.7 %
non residential	61,287,100,000	26 %	616,000,000	50.3 %

downtown makes up 37 % of all non residential value

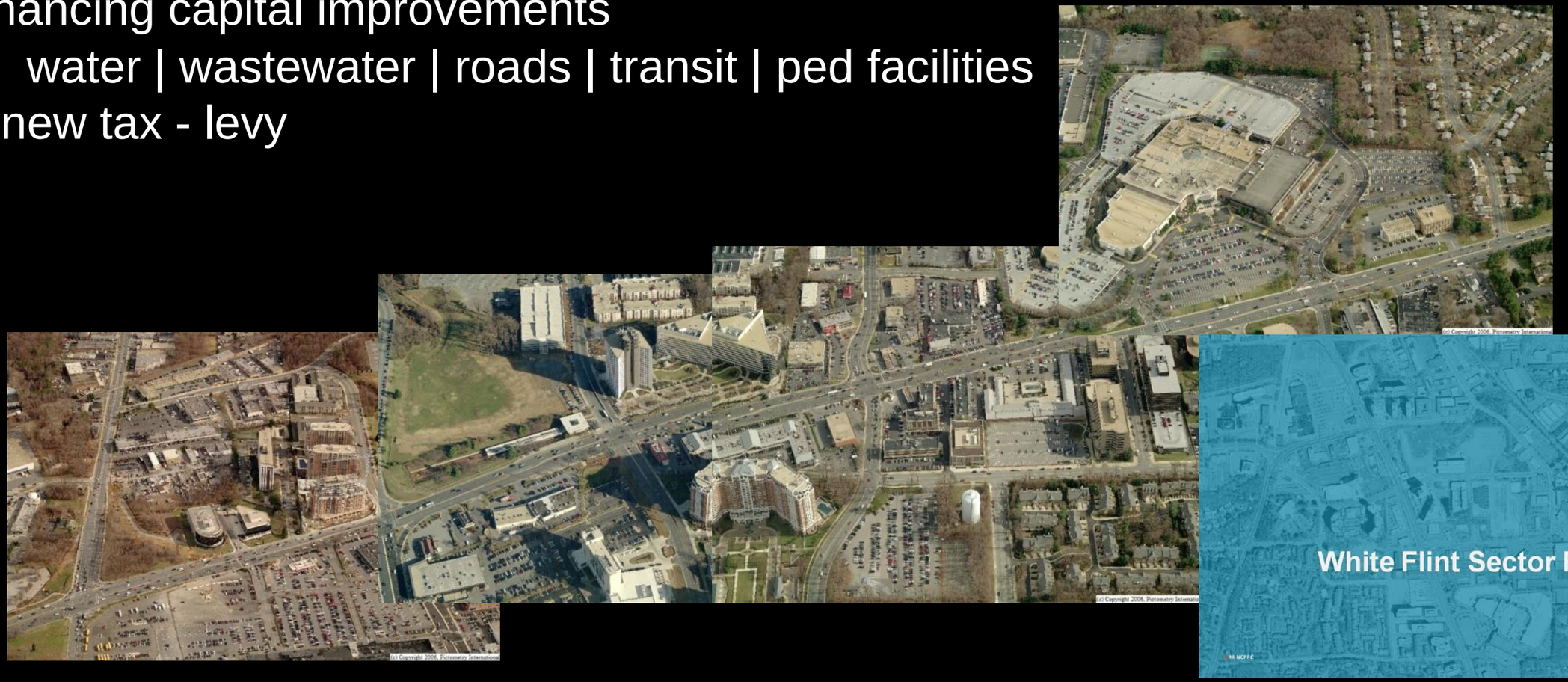


special taxing districts - md

financing capital improvements

water | wastewater | roads | transit | ped facilities

a new tax - levy

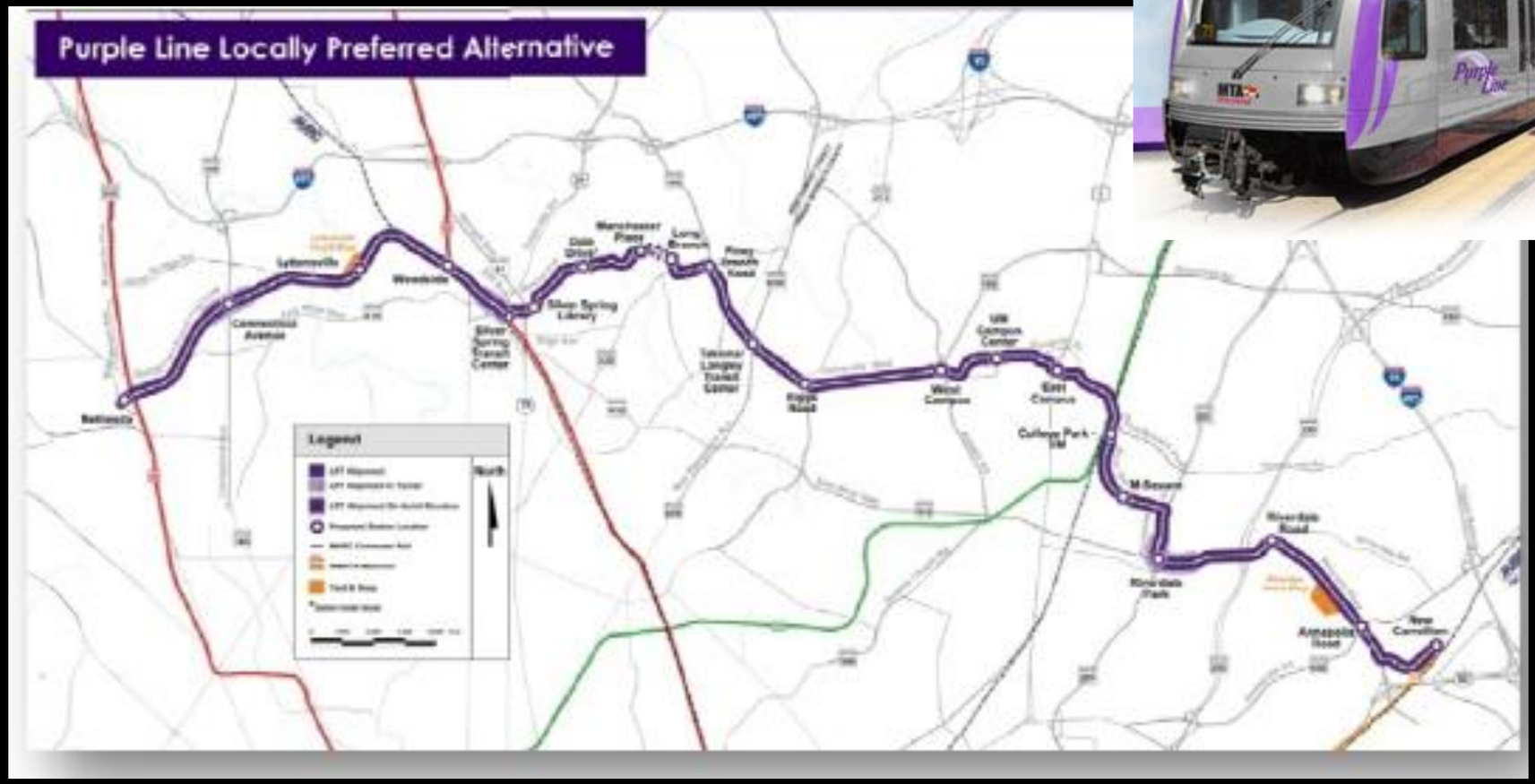


value tax capture - st. louis

tax increment revenue repays the bonds

value tax capture

purple line - within ½ mile



value tax capture

new revenues - above the base condition

property tax	motor fuel tax
titling tax	vehicle registration tax
income tax	vehicle repair tax
licence renewal	tolling
mitigation fees	impact fees
land transfer fees	development application fees
building permits	energy tax revenue

tax scenarios - special assessments | state share

Table 2: Purple Line – Cases Matrix

Case	TIF Revenue	Special Assessment Revenues		DIF Revenues	
	MDOT Share of Tax Increment	Residential (cents per $100 valuation)	Commercial (cents per $100 valuation)	Residential (per unit)[1]	Commercial (per sq ft)
Case A	33%	None	5 cents	$1,595	$5
Case B	50%	None	10 cents	$3,190	$5
Case C	60%	None	20 cents	$6,380	$5
Case D	70%	5 cents	10 cents	$1,595	$10
Case E	85%	10 cents	20 cents	$3,190	$10
Case F	100%	20 cents	30 cents	$6,380	$10

state contribution | local contribution

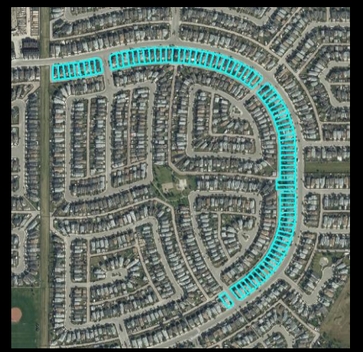
borrowing capacity - future revenue generation

Table 3: Purple Line - Cases Comparison (in millions)

Case	TIF Revenues		Special Assessment Revenues		DIF Revenues	
	PV of Total Revenue	Bonding Capacity of Revenue	PV of Total Revenue	Bonding Capacity of Revenue	PV of Total Revenue	Bonding Capacity of Revenue
Case A	$429	$330	$58	$44	$21	$16
Case B	$652	$501	$116	$89	$29	$22
Case C	$792	$609	$234	$180	$44	$34
Case D	$906	$697	$185	$142	$35	$27
Case E	$1,107	$852	$372	$286	$43	$33
Case F	$1,313	$1,010	$634	$487	$58	$45

operating costs & revenue - condo vs subdivision

	tribeca	coventry hills	difference
property tax | land area	$28.5 mill	$ 2.8 mill	10.2 X
street frontage	72 m	1.1 km	15.6 X less



does infill pay ?

	new condo	previous use
# of units	114	11 singles & 4 plexes
property tax	$272,000	$35,381
per occupant	$ 1,359	$ 585

Calgary

examples

dallas - light rail - 1993 - 2013

within ¼ mile of transit

$751 m in residential

$ 224 m in offices

$393 m in retail

50,000 jobs 157% return on investment

cleveland - bus rapid transit

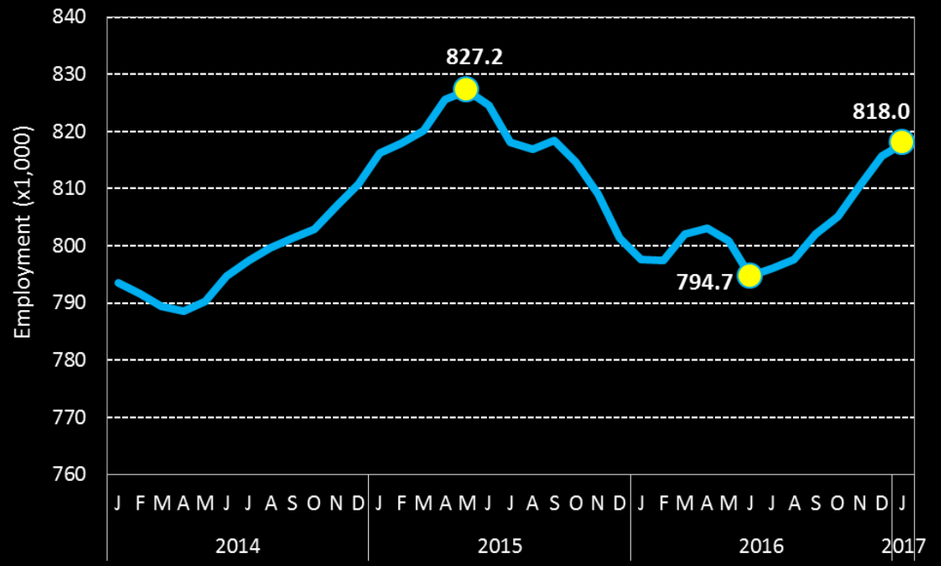
$200 million healthlink brt generated $4 b economic benefit
4,000 new homes | 7.9 m ft2 of commercial | 13,000 jobs
29 m passengers in one year - > 31% in 4 yrs
level boarding | frequent service

grand rapids mi

- 9.6 mile silver line brt - residential to medical mile
- 4,500 daily riders
- 32 % increase over regular bus
- 2nd line in planning
- 754 jobs & $88 million created

calgary

high floor lrt vehicles
not a street car - proposed expansion 26 m = $500+ ml
focus on moving people distances to jobs
102 million riders in 2017 - < 7 % = revenue shortfall



toronto - combinations - street car, subway, regional rail

toronto - calgary other cities have parking maximums

houston - dedicated right of way

montgomery county, md - brt vs lrt

transitway - linking tech corridor to density

	LRT	BRT
cost	$832 m	$545 m*
phasing	longer	
economic impact		45 % >
tax impact		65 % >
jobs		70% >

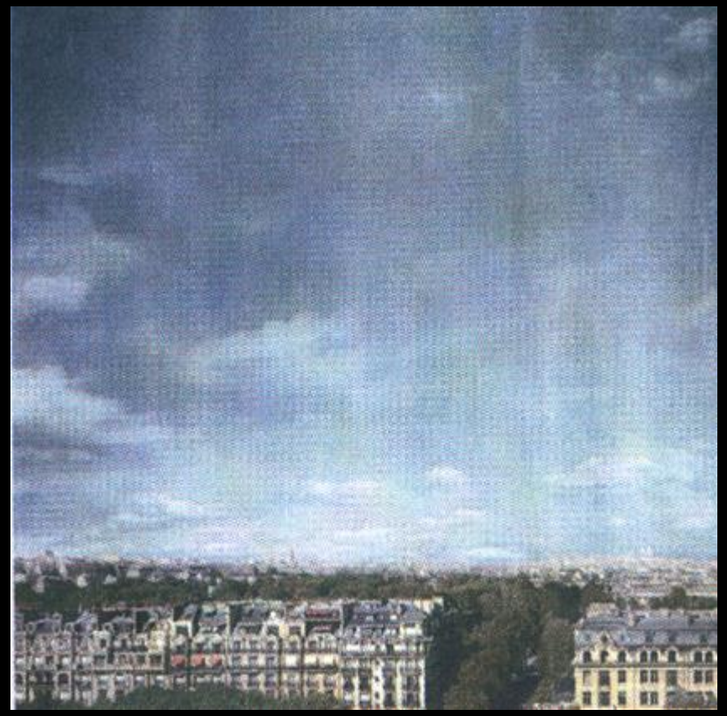
*2012 $

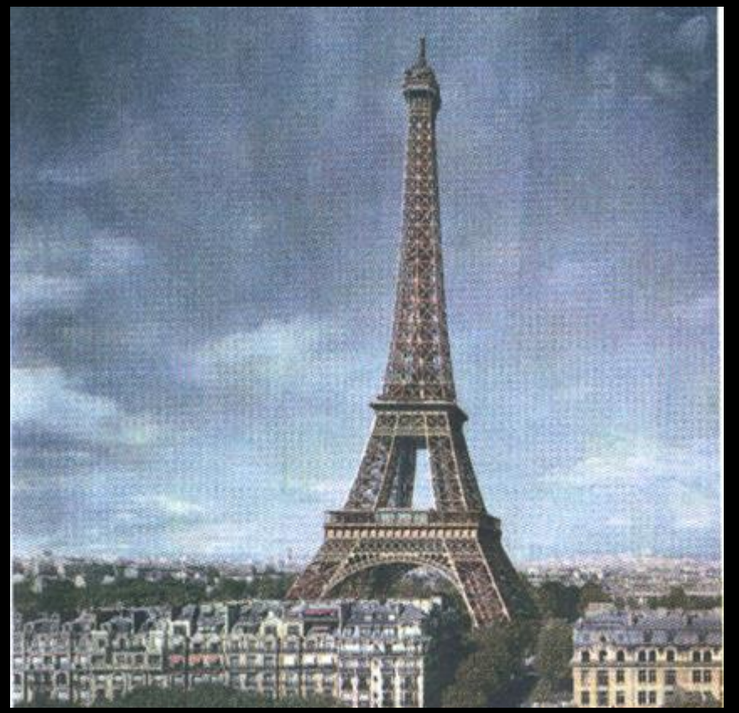
nashville tn - 2014

state tried to outlaw transit only lanes to prevent brt

austin tx - bus system revamp

retire long - low ridership routes
combine others into more efficient routes
reduce service to 15 min intervals
develop transit apps





boldness changes everything

control the things you can - factor in those you cannot

price of gas
real estate prices - walk score
personal airborne transportation (pats)
some will drive

make sure you reach the people who need it

Calgary

putting it all together

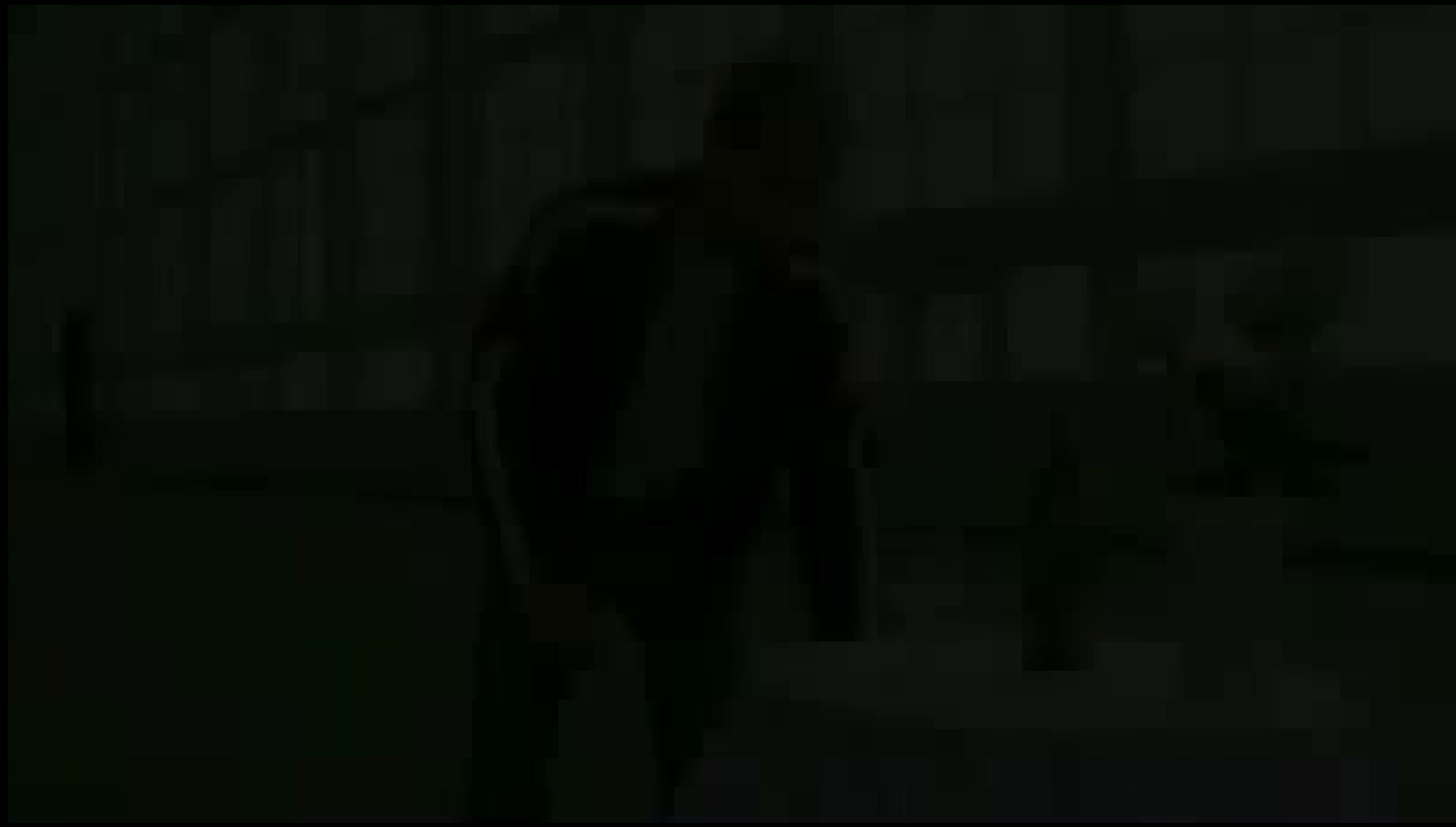
an idea

keep with the bus plan

narrow some streets

network of vanpools, car share, slugging, employee shuttle

add a lane - HOV, BRT, vanpool | reverse lane



question